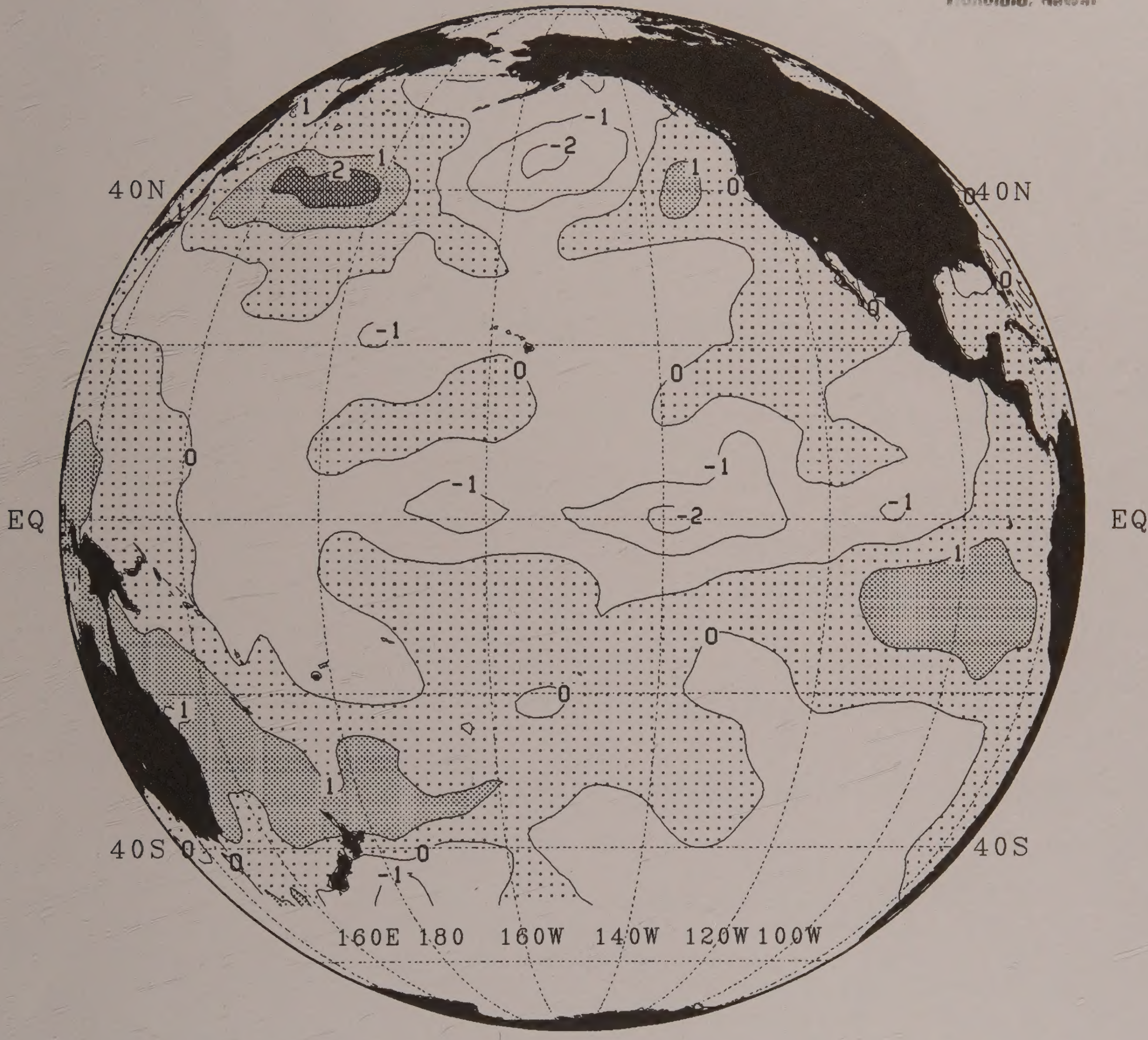
気象庁海洋月報

Monthly Ocean Report

September 1998 (No. 69)



Climate and Marine Department
Japan Meteorological Agency

気象庁 気候・海洋気象部

平成１０年９月

気象庁海洋月報は、気象庁 気候・海洋気象部 海洋課で作成しています。
本月報に関する問い合わせは、
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Monthly Ocean Report is prepared by the Oceanographical Division, Climate and Marine Department, Japan Meteorological Agency.

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表紙は、1998年9月の太平洋の月平均海面水温偏差図です。
陰影部は、平年より高温の海域を示しています。

The figure on the front cover shows the monthly mean SST anomalies for September 1998 in the Pacific Ocean.
Areas of positive anomalies are shaded.

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海況の特徴（１９９８年９月）

日本近海の海況

海面水温は，日本海南部及びサハリン周辺で平年より１℃以上高かった（第4図）。

黒潮は，種子島の南東で小さく蛇行し，九州から紀伊半島にかけて接岸した後，東に流れ，上・中旬は八丈島付近を，下旬は八丈島の北を通り，房総半島沖を東に流れていた（第9図）。

親潮系の冷水の沿岸寄りの分枝は39.0°N，143.0°Eまで達していた（第5図）。

太平洋の海況

太平洋赤道域の海面水温は，負偏差域が８月より東に広がり160°Eから100°Wにかけて分布し，140°W付近では-2℃以下の負偏差が見られた。フィリピン周辺の正偏差は８月より強まり，140°E以西は＋１℃以上の正偏差域となっていた。

北太平洋では，40°Nに沿った170°W以西及び135°W付近で平年より1℃以上高く，170°E付近では＋3℃以上の正偏差が見られた。40°Nに沿った165°Wから140°Wにかけては，平年より1℃以上低く，45°N，155°W付近では－2℃以下の負偏差となっていた。30°Nに沿った140°E～160°Eでは平年より0.5℃以上低かった（第16図）。

Highlights September 1998

Seas adjacent to Japan

SSTs were more than 1°C above normal in the southern part of the Japan Sea and around Sakhalin (Fig. 4).

The Kuroshio meandered slightly southeast of Tanegashima and flowed along the coasts from Kyushu to the Kii Peninsula, then flowed eastward. It passed near Hachijo Island in the first and second 10-days of the month and north of Hachijo Island in the last 10-day, then flowed eastward off the Boso Peninsula (Fig. 9).

The coastal branch of the Oyashio cold water extended southward to 39.0°N, 143.0°E (Fig. 5).

Pacific Ocean

In the equatorial Pacific, the region of negative SST anomaly expanded eastward and dominated from 160°E to 100°W, and negative SST anomalies exceeding -2℃ were found around 140°W. Positive SST anomalies around the Philippines have increased since the last month, and those exceeding +1℃ prevailed west of 140°E.

In the North Pacific, positive SST anomalies exceeding +1℃ prevailed west of 170°W along 40°N and around 40°N, 135°W. SSTs were more than 3℃ above normal around 40°N, 170°E. Negative SST anomalies exceeded -1℃ from 165°W to 140°W along 40°N and -2℃ around 45°N, 155°W. Negative SST anomalies exceeding -0.5℃ were observed from 140°E to 160°E along 30°N (Fig. 16).

北西太平洋における二酸化炭素の観測
Observation of carbon dioxide in the western North Pacific

気象庁の海洋気象観測船「凌風丸」は，1998年6月10日から7月17日にかけて，北西太平洋で表面海水中および洋上大気中二酸化炭素濃度（分圧，pCO_2）の観測を実施した。今回，亜寒帯域では表面海水CO_2濃度の変動の要因を探るため，表面海水中の全炭酸，クロロフィル*a*，栄養塩濃度の観測も実施した。

30°N以南の観測では，表面海水のpCO_2が大気のものと比べて高く，当海域は大気への二酸化炭素の放出域であった（図A）。表面海水のpCO_2は，エルニーニョ現象であった1997年7月の観測と比べて高かった。

35°N以北の観測では，多くの観測点でCO_2の吸収域が観測された。特に41°N，149°Eでは，表面海水のpCO_2が大気より109μatm低かった。この観測点では，近傍における他の観測点と比べて全炭酸濃度が低下（表面海水のpCO_2を低下させる効果）していた。また，クロロフィル*a* 濃度が高く，栄養塩濃度も低かったことから，この観測点では生物活動が活発であったと考えられる。

The Japan Meteorological Agency (JMA) observed carbon dioxide concentrations (partial pressure, pCO_2) in the surface water and the overlying atmosphere in the western North Pacific on board R/V *Ryofu Maru* from June 10 to July 17, 1998. JMA also observed total inorganic carbon (TIC), chlorophyll*a* and nutrient concentrations to clarify the factors controlling pCO_2 in the surface water in this observation.

In the region south of 30°N, the pCO_2 in the surface water were higher than those in the atmosphere, implying that oceanic CO_2 was being emitted into the atmosphere. They were also higher than those observed in July 1997 at warm episode (ENSO) condition.

North of 35°N, regions in which atmospheric CO_2 were absorbed into the ocean were observed at many stations. At the 41°N, 149°E in particular, pCO_2 in the surface water was 109μatm lower than that in the atmosphere. This station was the one where TIC concentration was lower (which corresponds to a decrease in pCO_2 in the surface water) as compared with other nearby stations. It is also considered that this region was the one where biological activity was vigorous because the concentration of chlorophyll*a* was higher and that of nutrients were lower than those at other nearby stations.

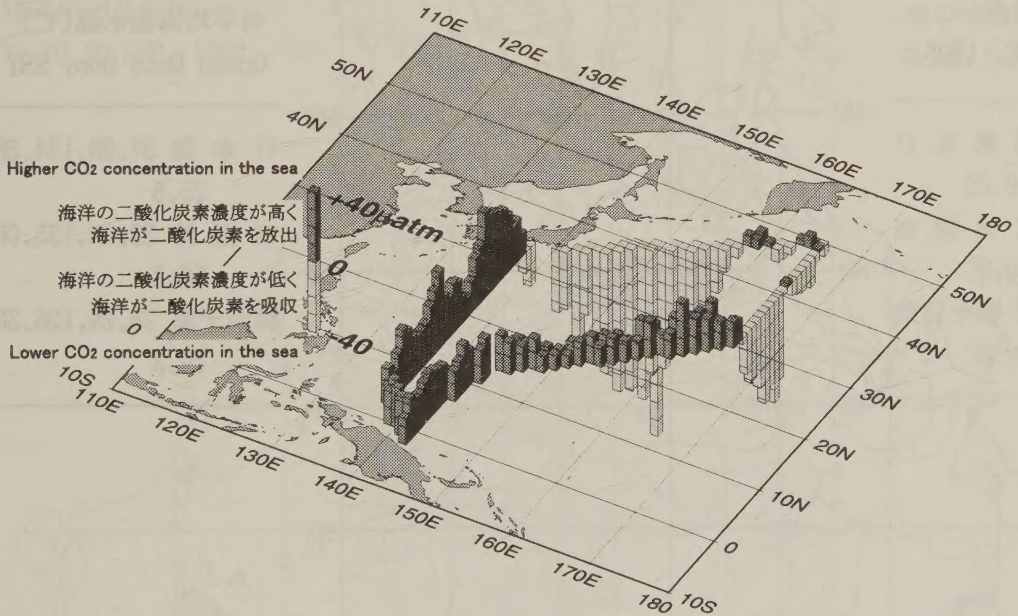
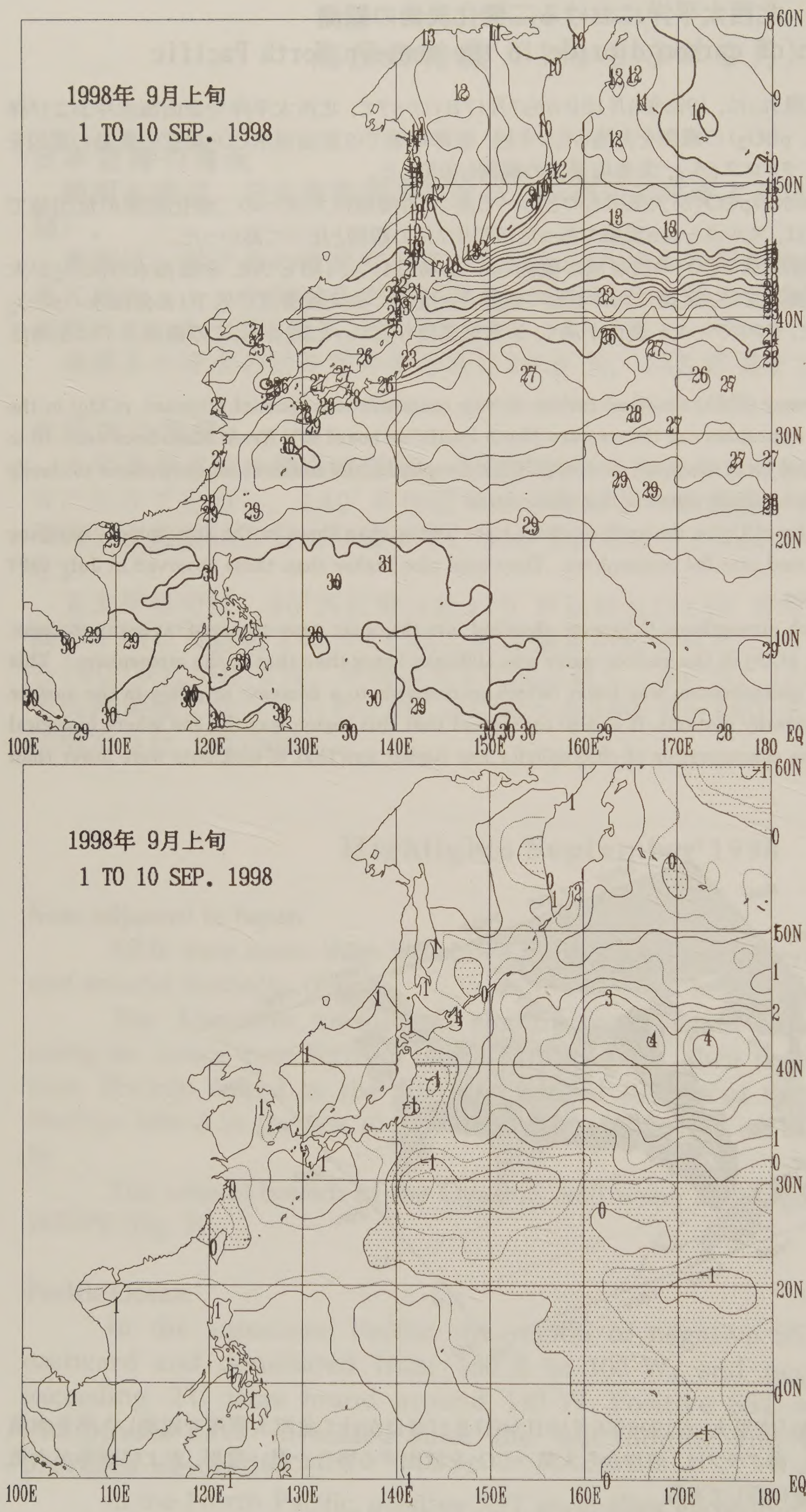


図 A　気象庁の海洋気象観測船「凌風丸」が1998年6月10日から7月17日にかけて北西太平洋で観測した洋上大気中と表面海水中のCO_2の濃度差。棒グラフは，海洋から大気へCO_2を放出する場合を濃い陰影，および海洋が大気のCO_2を吸収する場合を薄い陰影に示してある。

Fig. A　Difference in the CO2 concentration between the surface water and the overlying atmosphere in the western North Pacific observed by the R/V Ryofu Maru of JMA from June 10 to July 17, 1998. Darker-shaded upward pillars indicate that the oceanic CO_2 was being emitted into the atmosphere, and lighter-shaded downward pillars indicate that the atmospheric CO_2 was being absorbed into the ocean, respectively.



旬平均沿岸水温(℃)
Coastal Water Temperature

地点名 (Index Number)	水温 Temp.	偏差 Anom.
石垣(47918)	29.4	0.6
御前崎(47655)	25.8	0.0
八丈島(47678)	28.1	1.2
小名浜(47598)	21.6	-0.7
宮古(47585)	19.9	-0.1
江差(47428)	23.9	-
浜田(47755)	26.8	-

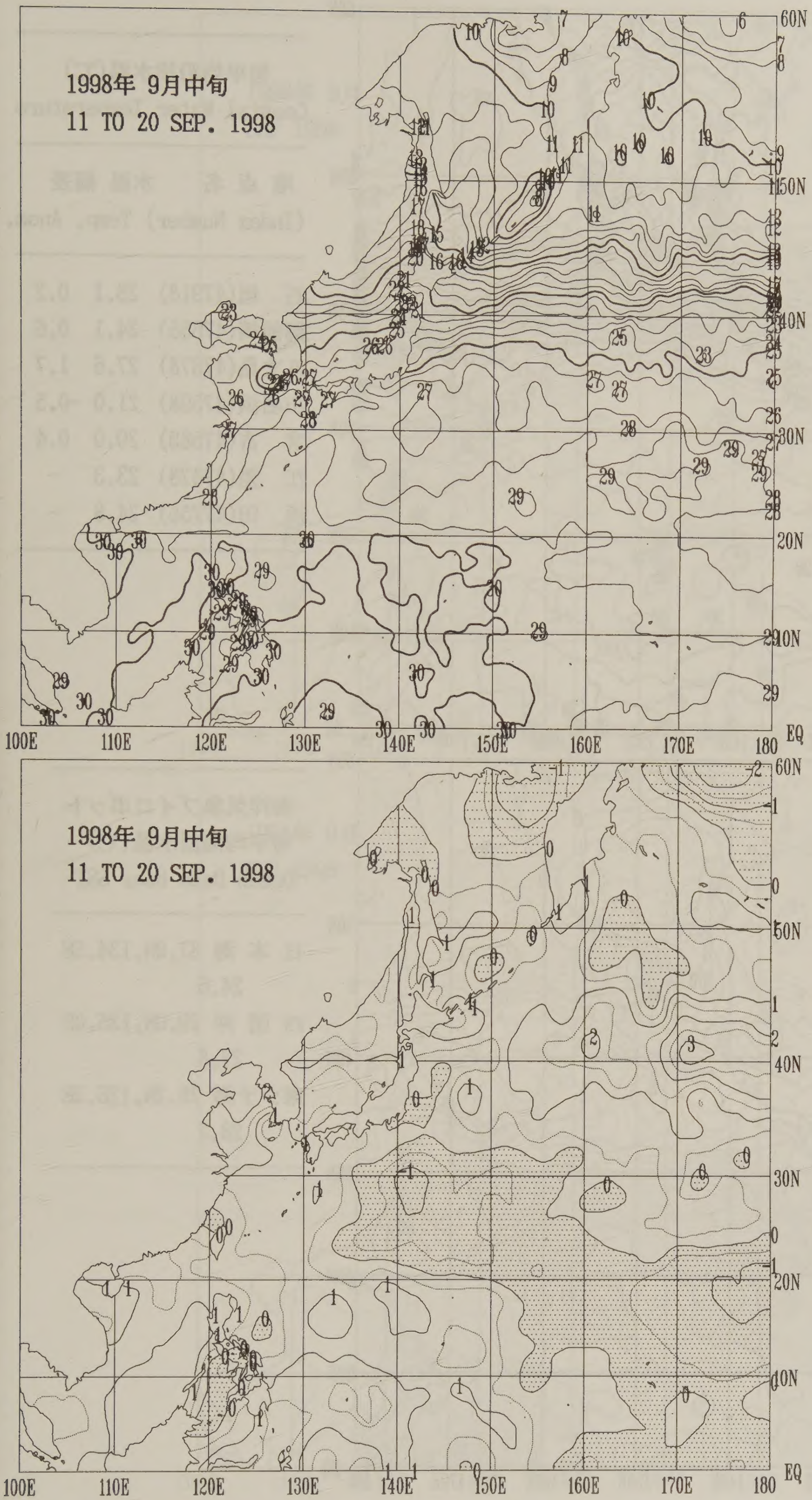
海洋気象ブイロボット
旬平均海面水温(℃)
Ocean Data Buoy SST

日本海	37.9N,134.5E	25.5
四国沖	29.0N,135.0E	30.2
東シナ海	28.2N,126.3E	29.3

第1図 北西太平洋旬平均海面水温図(上)及び偏差図(下)(1998年 9月上旬)

Fig.1 Ten-day mean SST (top) and anomalies (bottom) in the western North Pacific for the 1st ten-day period in SEP 1998. Anomalies are computed from the JMA climatology (1961-90). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown by broken lines. Negative anomalies are spotted.

Ten-day mean SST & Anomalies



旬平均沿岸水温(℃)
Coastal Water Temperature

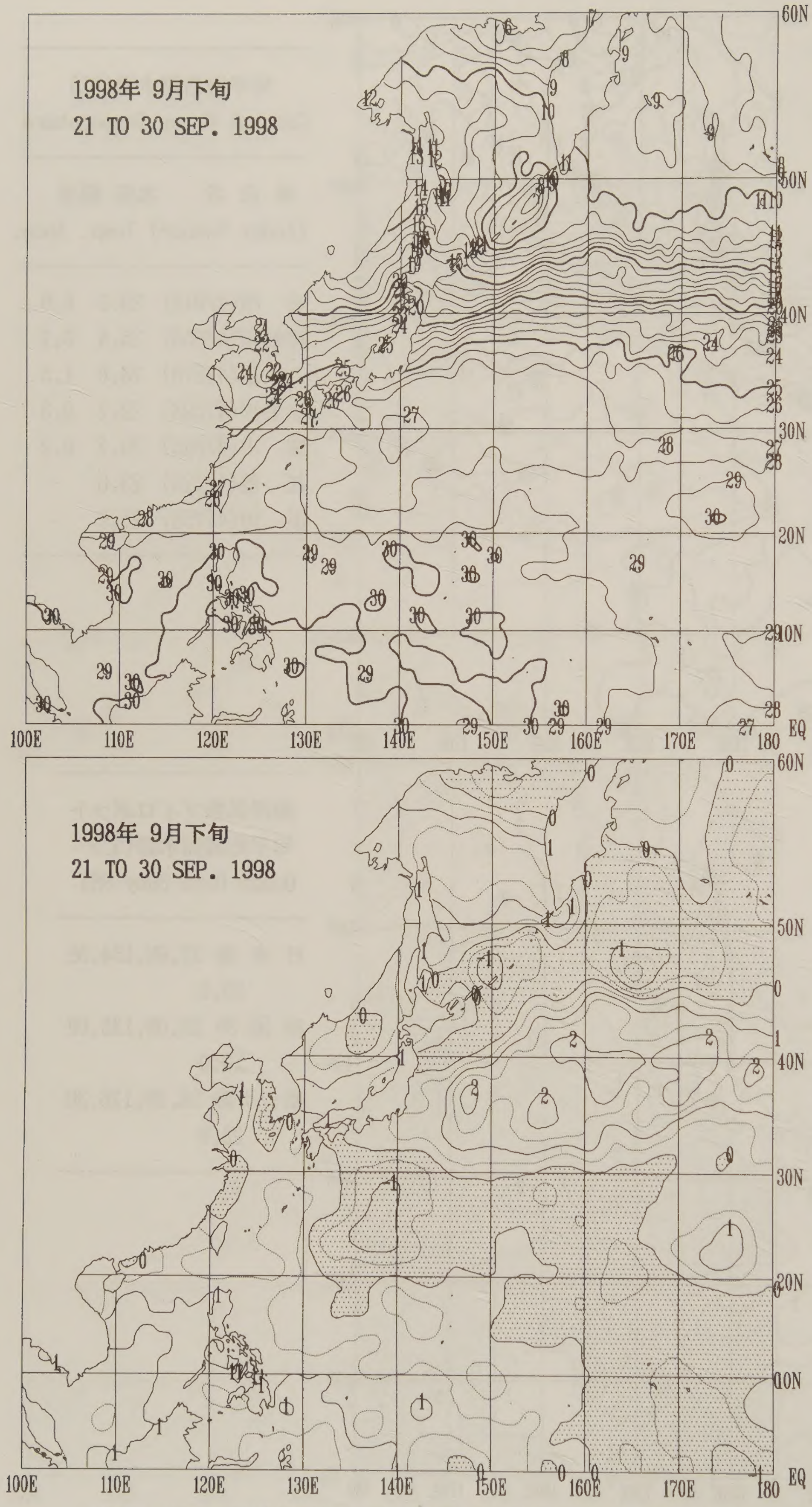
地点名 (Index Number)	水温 Temp.	偏差 Anom.
石　垣(47918)	29.3	0.9
御前崎(47655)	25.4	0.7
八丈島(47678)	28.0	1.5
小名浜(47598)	22.2	0.3
宮　古(47585)	20.2	0.2
江　差(47428)	23.6	-
浜　田(47755)	25.9	-

海洋気象ブイロボット
旬平均海面水温(℃)
Ocean Data Buoy SST

地点	位置	水温
日本海	37.9N,134.5E	25.9
四国沖	29.0N,135.0E	29.0
東シナ海	28.2N,126.3E	28.9

第2図 北西太平洋旬平均海面水温図(上)及び偏差図(下)(1998年 9月中旬)

Fig.2 Ten-day mean SST (top) and anomalies (bottom) in the western North Pacific for the 2nd ten-day period in SEP 1998. Anomalies are computed from the JMA climatology (1961-90). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown by broken lines. Negative anomalies are spotted.



旬平均沿岸水温(℃)
Coastal Water Temperature

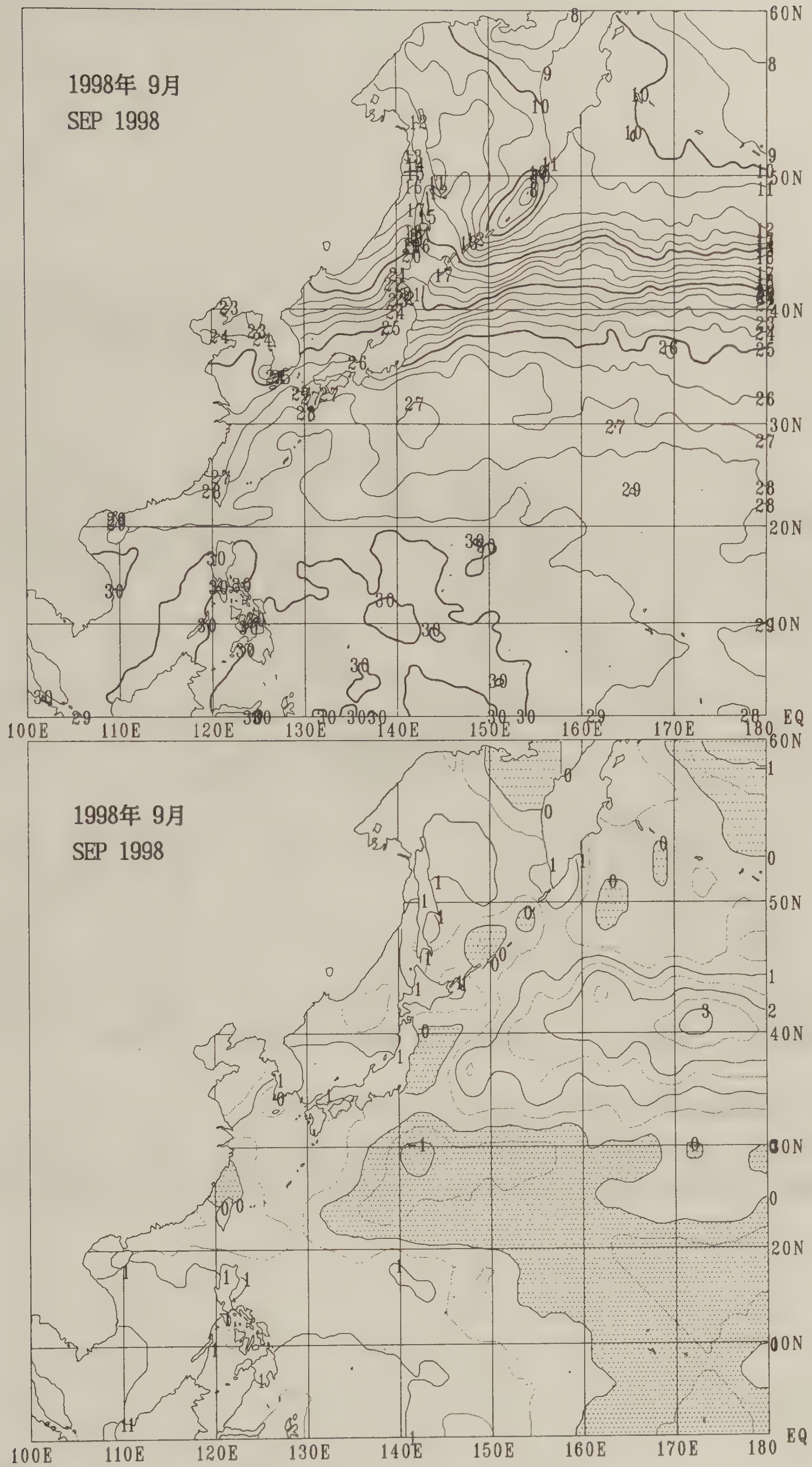
地点名 (Index Number)	水温 Temp.	偏差 Anom.
石　垣(47918)	28.1	0.2
御前崎(47655)	24.1	0.6
八丈島(47678)	27.6	1.7
小名浜(47598)	21.0	-0.5
宮　古(47585)	20.0	0.4
江　差(47428)	23.3	-
浜　田(47755)	24.8	-

海洋気象ブイロボット
旬平均海面水温(℃)
Ocean Data Buoy SST

日本海	37.9N,134.5E	24.6
四国沖	29.0N,135.0E	27.8
東シナ海	28.2N,126.3E	28.2

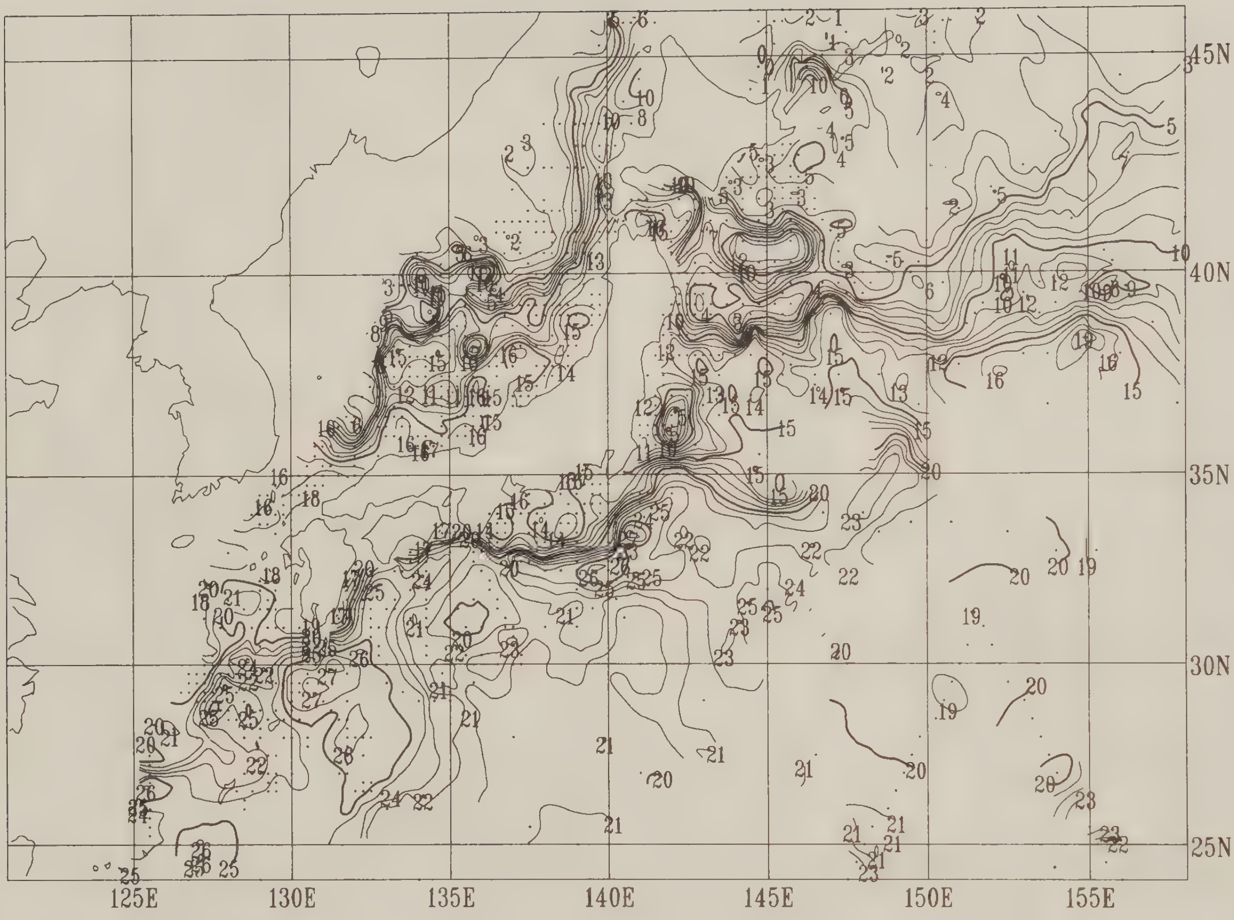
第3図 北西太平洋旬平均海面水温図(上)及び偏差図(下)(1998年 9月下旬)

Fig.3 Ten-day mean SST (top) and anomalies (bottom) in the western North Pacific for the 3rd ten-day period in SEP 1998. Anomalies are computed from the JMA climatology (1961-90). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown by broken lines. Negative anomalies are spotted.



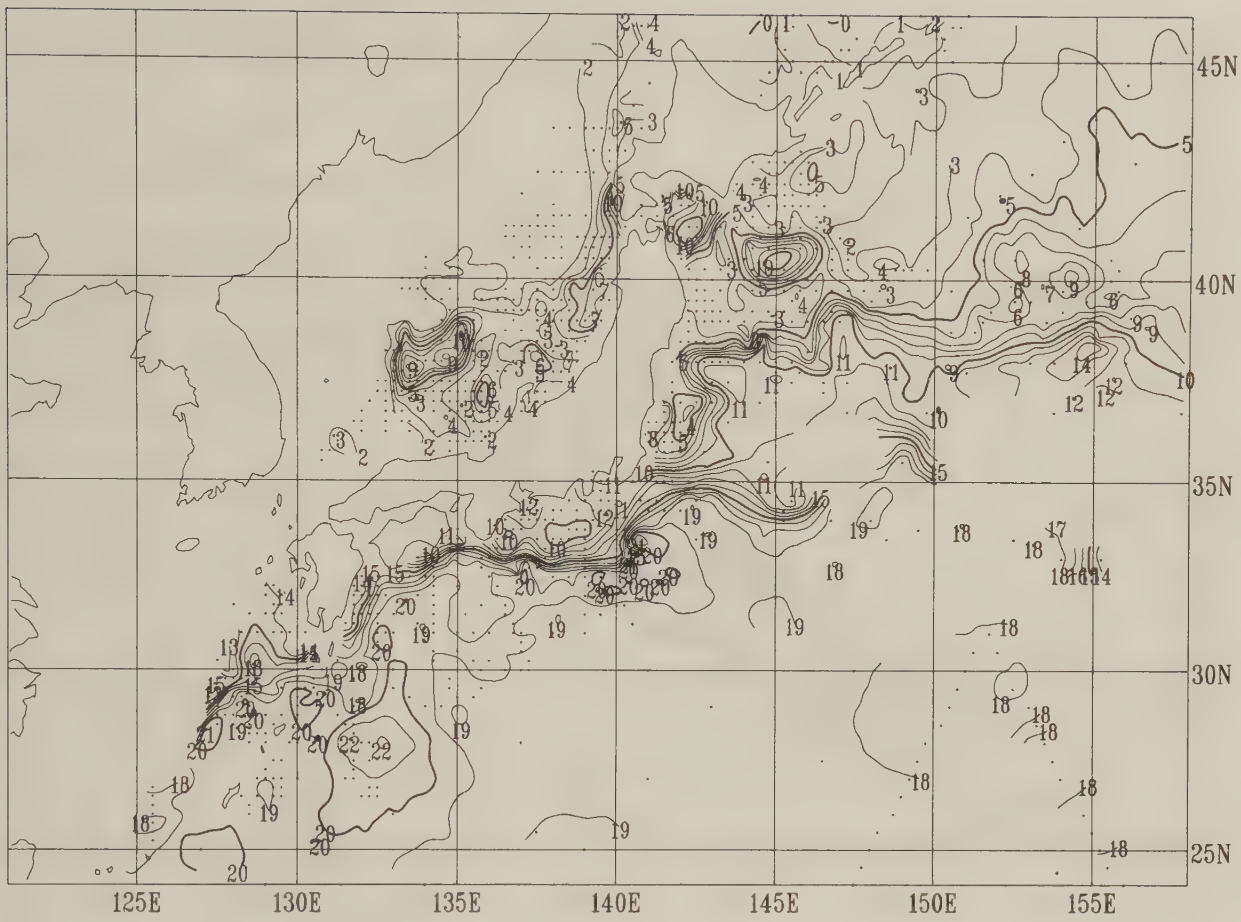
第4図 北西太平洋月平均海面水温図(上)及び偏差図(下)(1998年 9月)

Fig.4 Monthly mean SST (top) and anomalies (bottom) in the western North Pacific for SEP 1998. Anomalies are computed from the JMA climatology (1961-1990). Contour interval is 1°C and additional anomaly contours of 0.5°C are shown by broken lines. Negative anomalies are spotted.



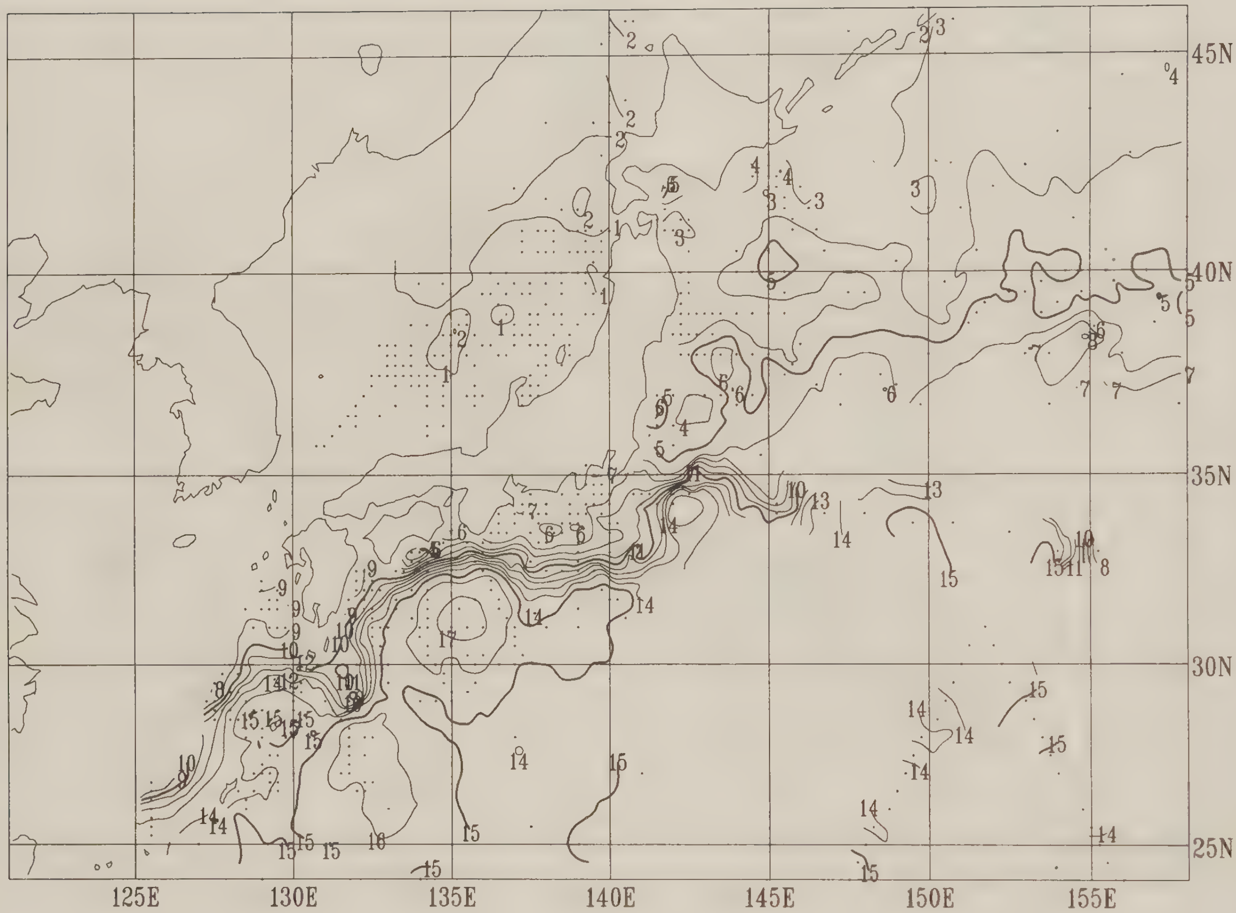
第5図　日本近海表層水温図(深さ100m)(1998年 9月)

Fig.5 Subsurface (100m) temperatures in the seas adjacent to Japan for SEP 1998. Contour interval is 1°C. Observation points are denoted by dots.



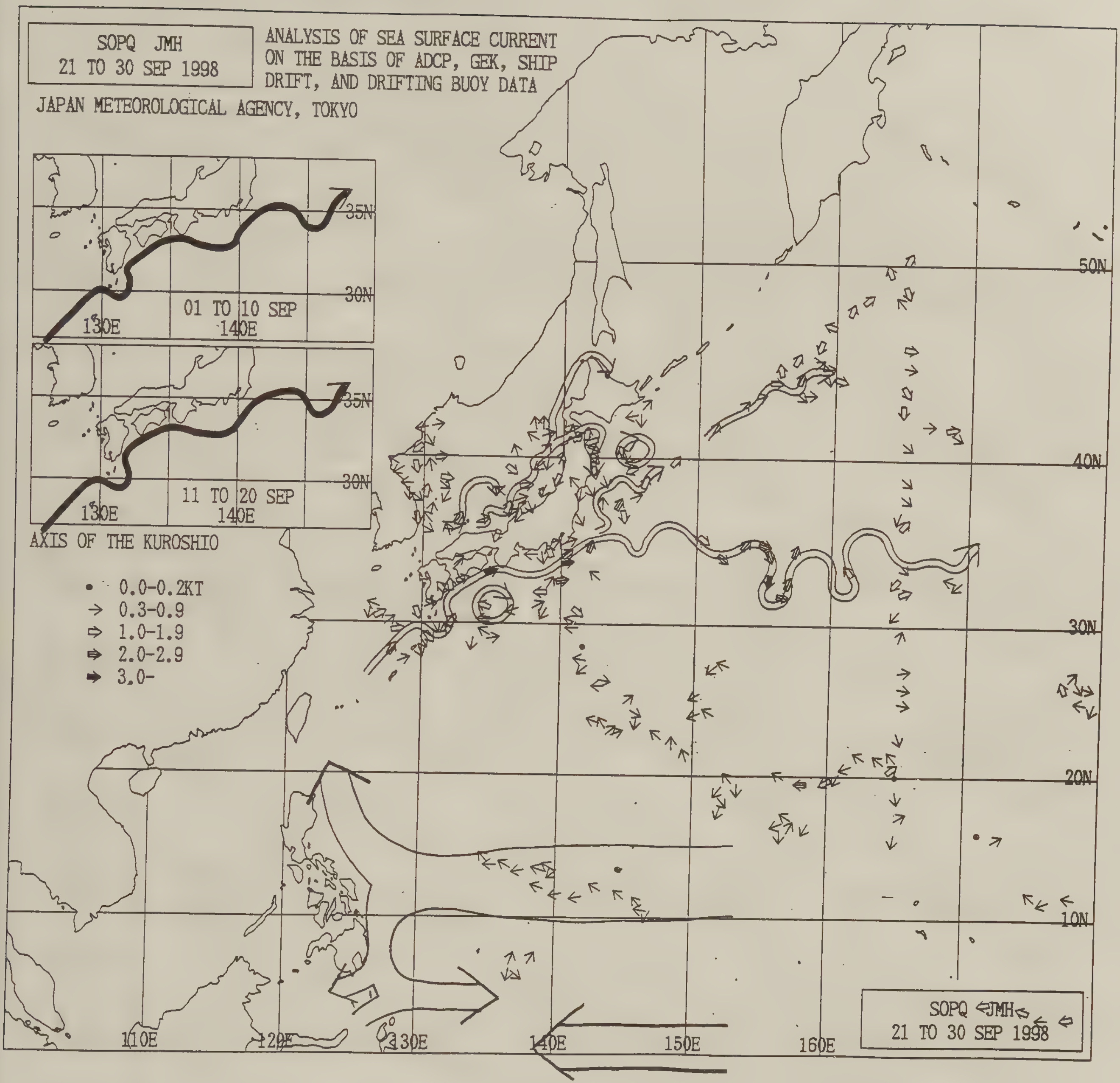
第6図　日本近海表層水温図(深さ200m) (1998年 9月)

Fig.6 Subsurface (200m) temperatures in the seas adjacent to Japan for SEP 1998. Contour interval is 1°C. Observation points are denoted by dots.



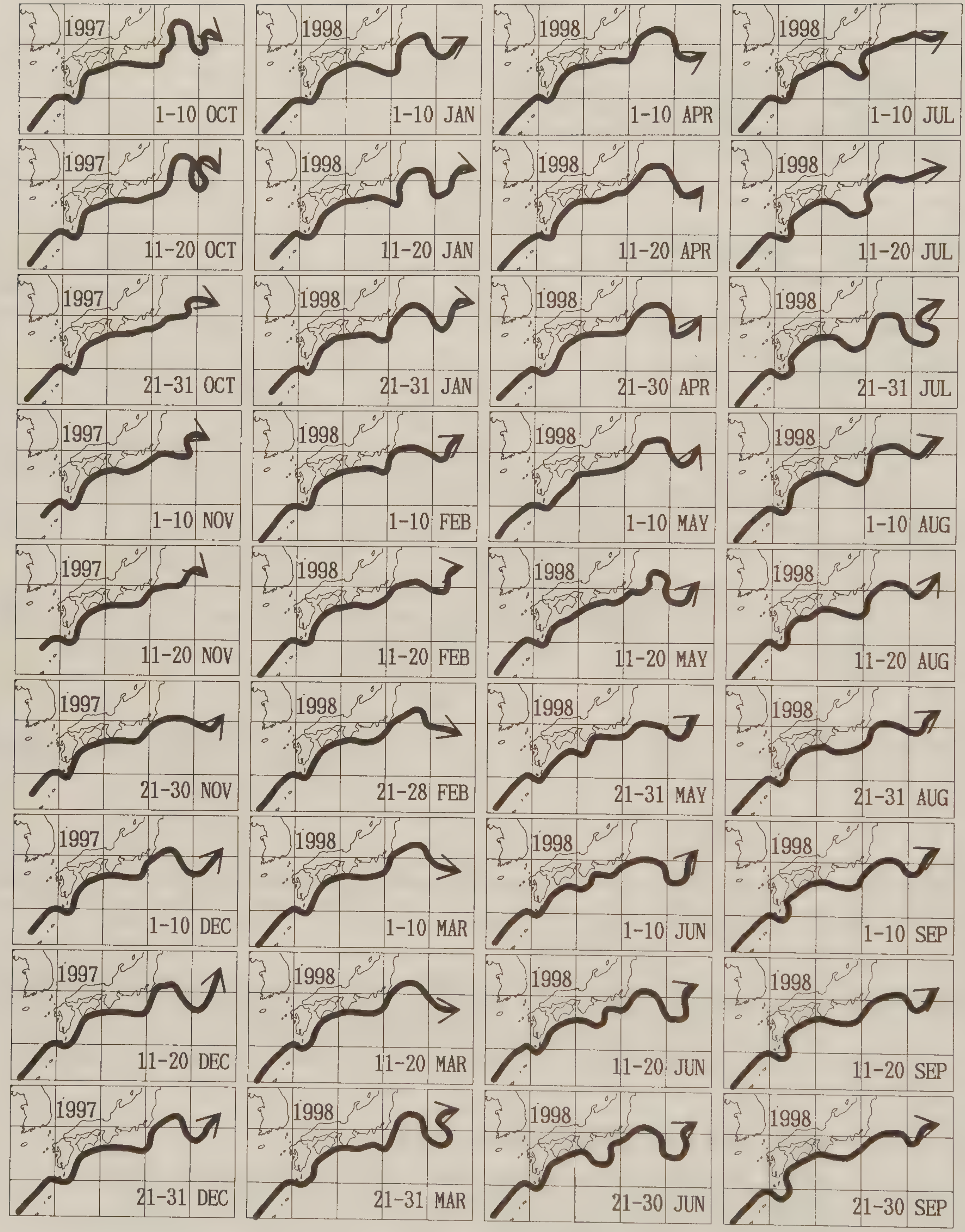
第7図　日本近海表層水温図(深さ400ｍ)（1998年 9月)

Fig.7 Subsurface (400m) temperatures in the seas adjacent to Japan for SEP 1998. Contour interval is 1°C. Observation points are denoted by dots.



第8図　北西太平洋海流図（1998年 9月下旬）

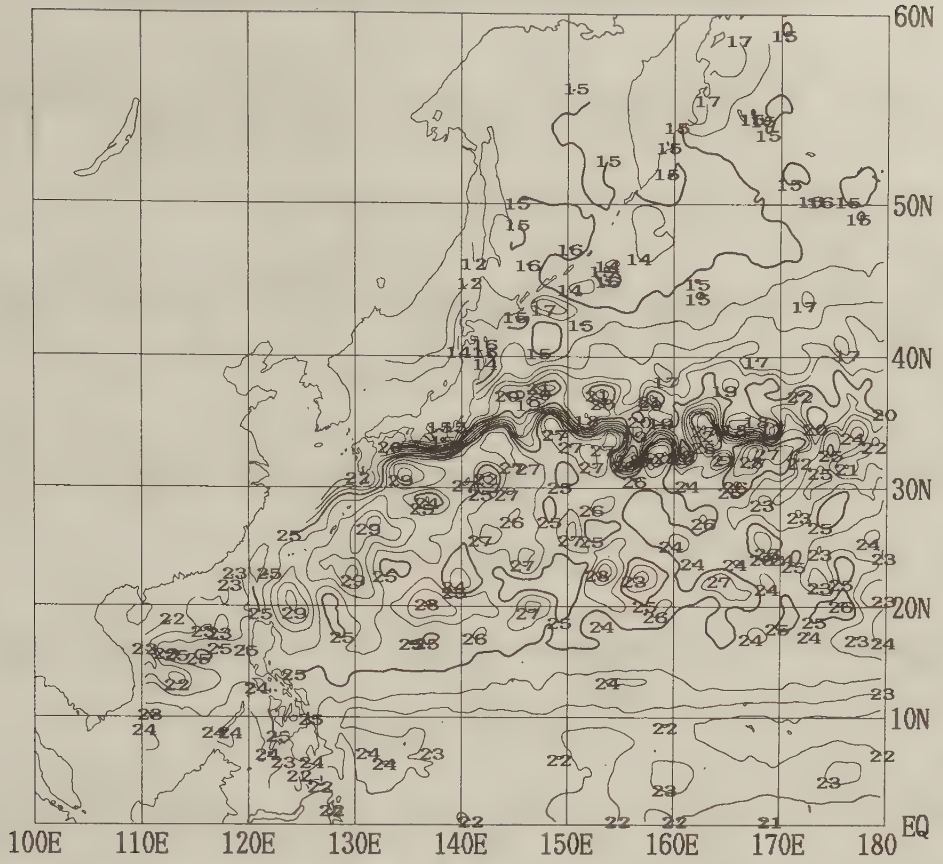
Fig.8 Analysis of the sea surface current in the western North Pacific for the 3rd ten-day period in SEP 1998. Small arrows indicate in situ observations. Major currents such as the Kuroshio and the North Equatorial Current are denoted by larger open arrows.



第9図 旬別黒潮流軸図

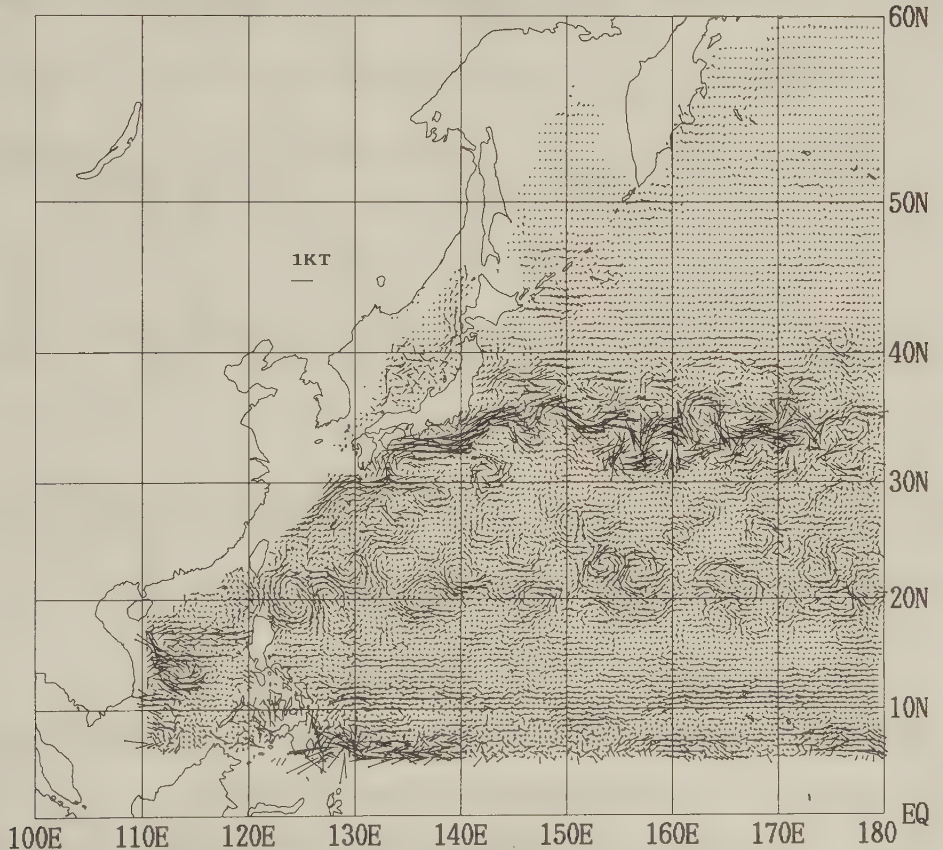
Fig.9 Location of the Kuroshio axis

Sea surface dynamic heights and current distribution



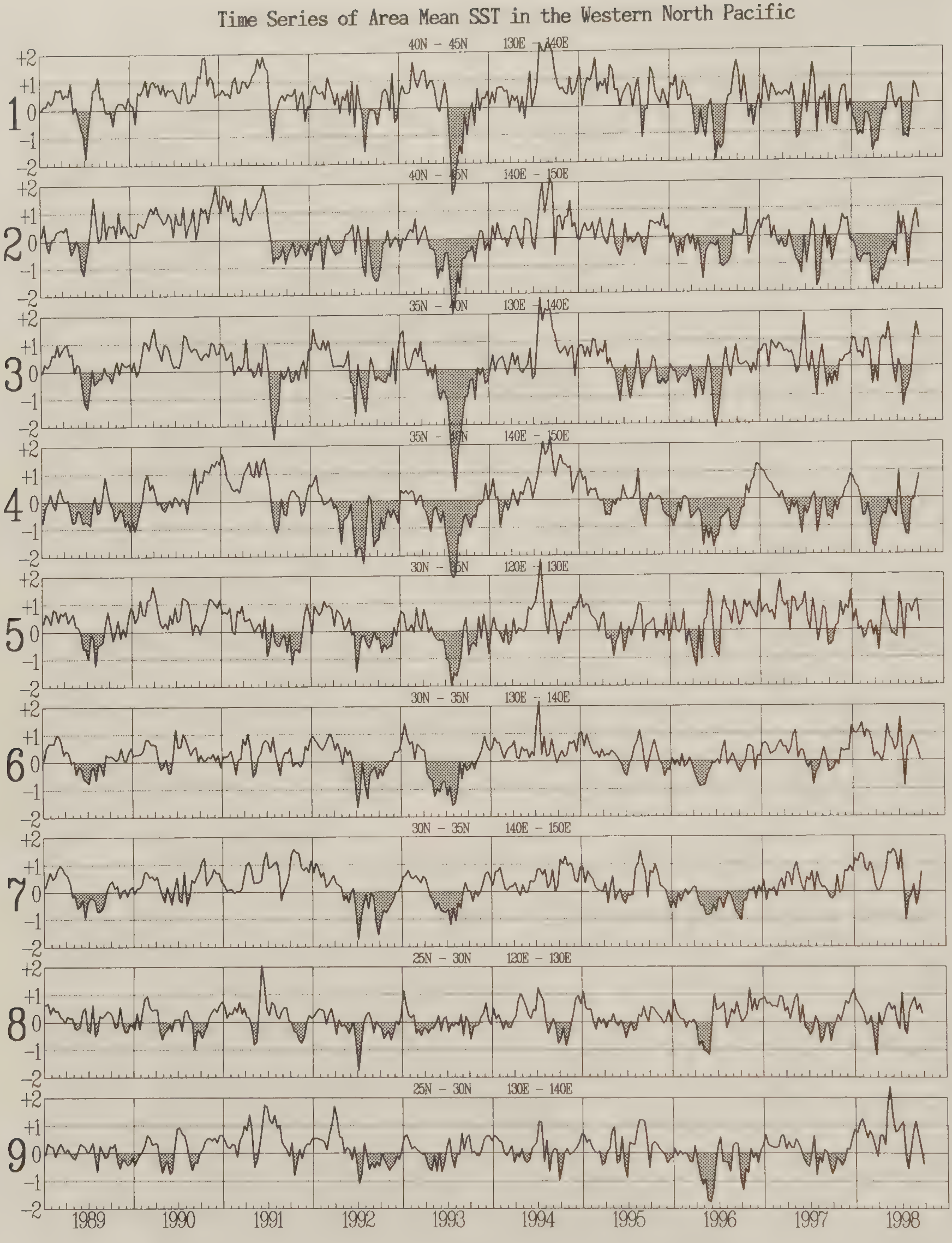
第10図 北西太平洋力学的海面高度分布図(1998年 9月18日)

Fig.10 Sea surface dynamic heights (10cm) in the western North Pacific derived from the altimeter data of TOPEX/POSEIDON (SEP 18, 1998).
1500db surface is assumed to be the surface of no motion.



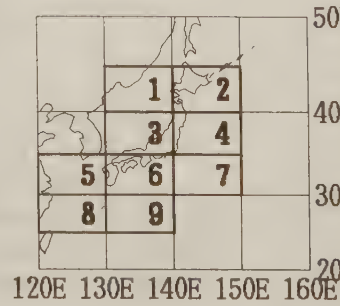
第11図 北西太平洋海流ベクトル図(1998年 9月18日)

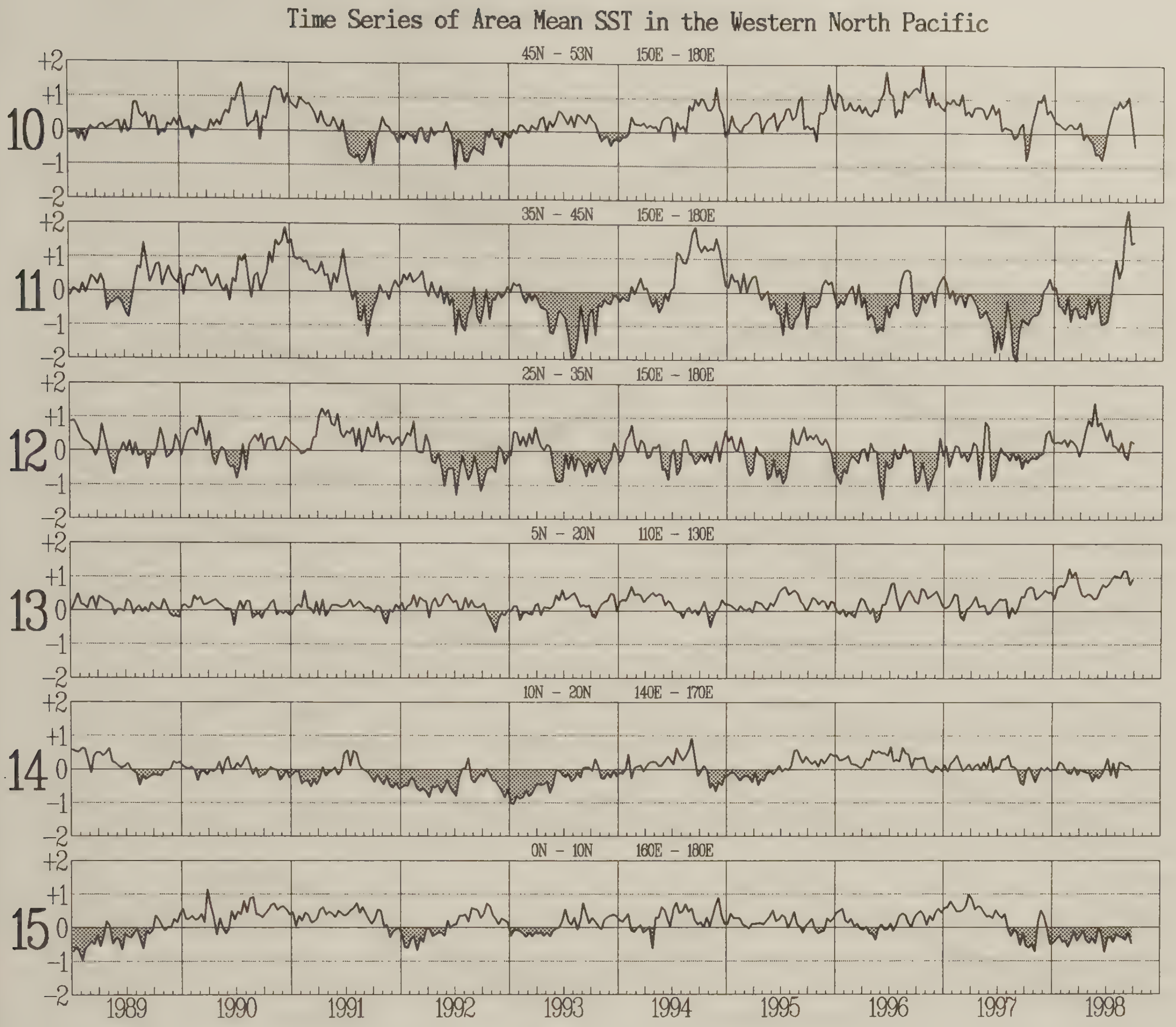
Fig.11 Sea surface current vectors in the western North Pacific (SEP 18, 1998). Vectors are derived from the sea surface dynamic heights from TOPEX/POSEIDON and subsurface temperature distribution assuming the geostrophic relation.



第12図　海域別旬平均海面水温平年偏差時系列図

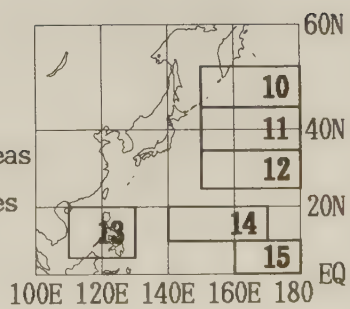
Fig.12 Time series of the ten-day mean sea surface temperature anomalies (°C) in the western North Pacific for the areas shown in the right panel. Negative anomalies are shaded. Anomalies are computed from the JMA climatology (1961-90).

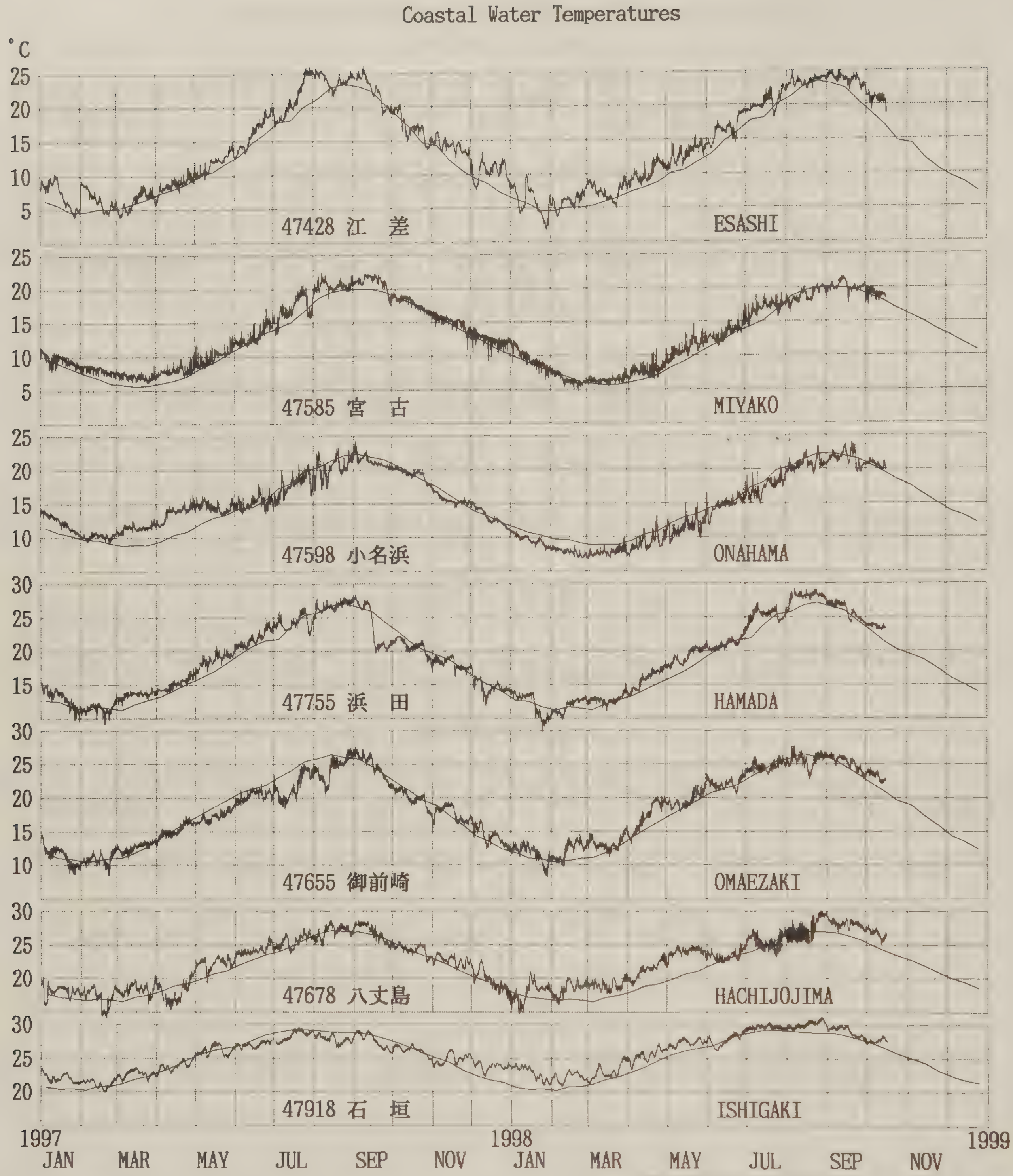




第12図　海域別旬平均海面水温平年偏差時系列図（つづき）

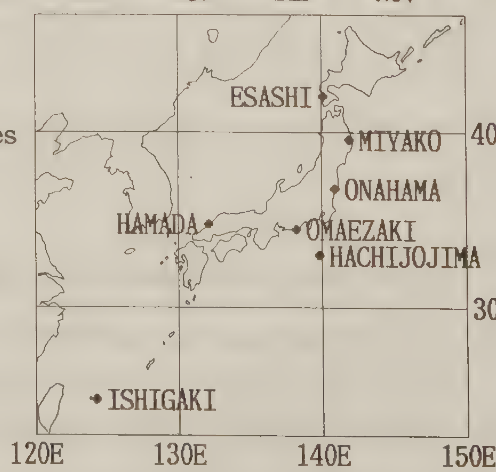
Fig.12 (continue) Time series of the ten-day mean sea surface temperature anomalies (°C) in the western North Pacific for the areas shown in the right panel. Negative anomalies are shaded. Anomalies are computed from the JMA climatology (1961-90).

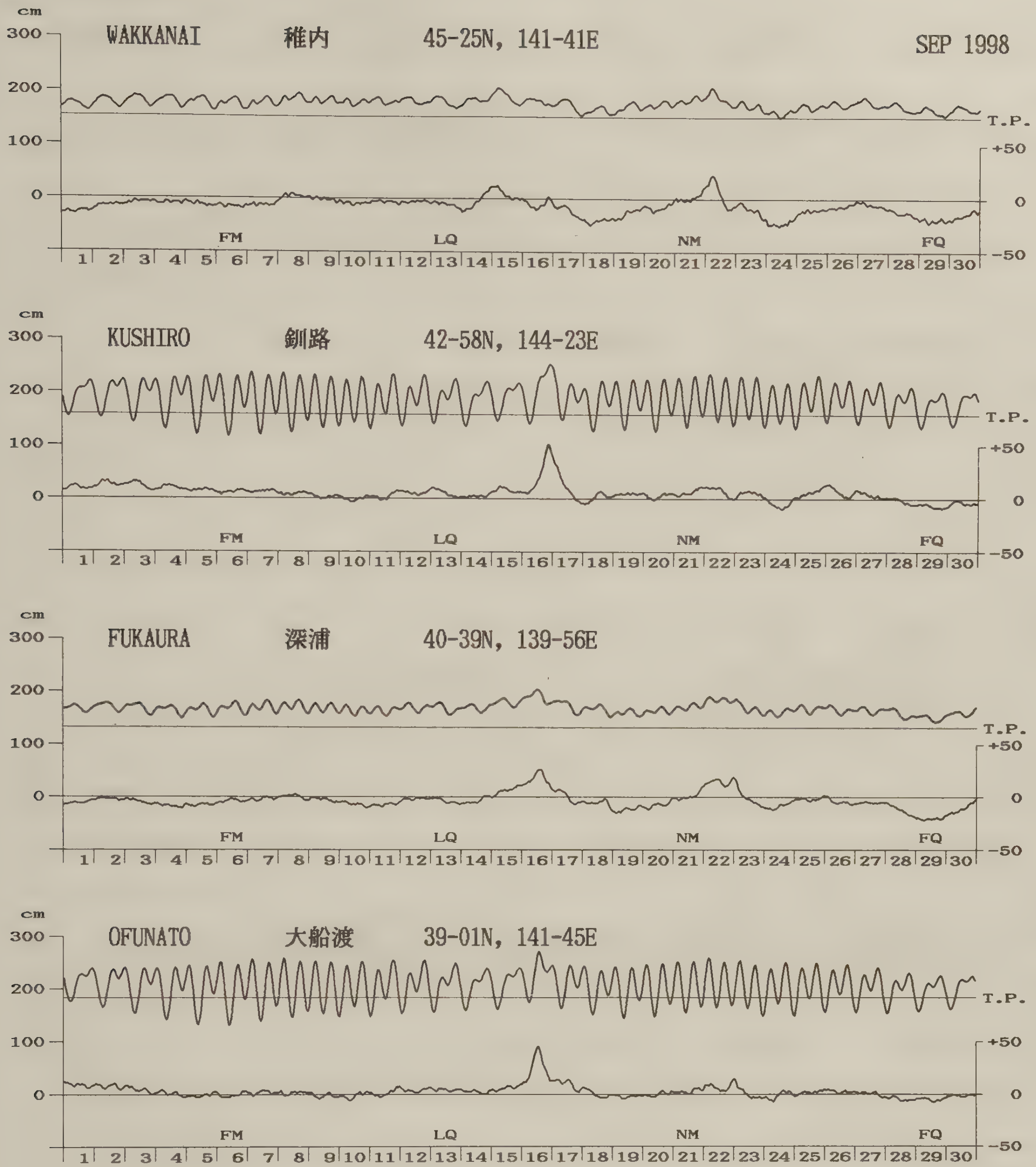


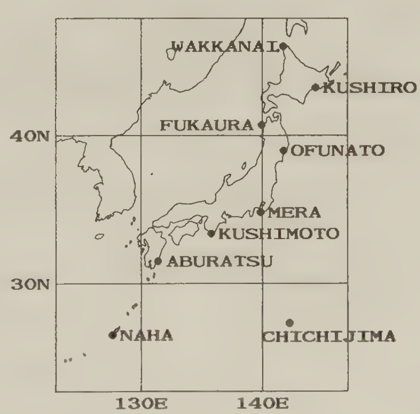


第13図 沿岸水温時系列図

Fig.13 Time series of hourly coastal water temperatures (°C) measured at 7 coastal stations of the JMA shown in the right panel.
Thin lines show ten-day mean climatology.





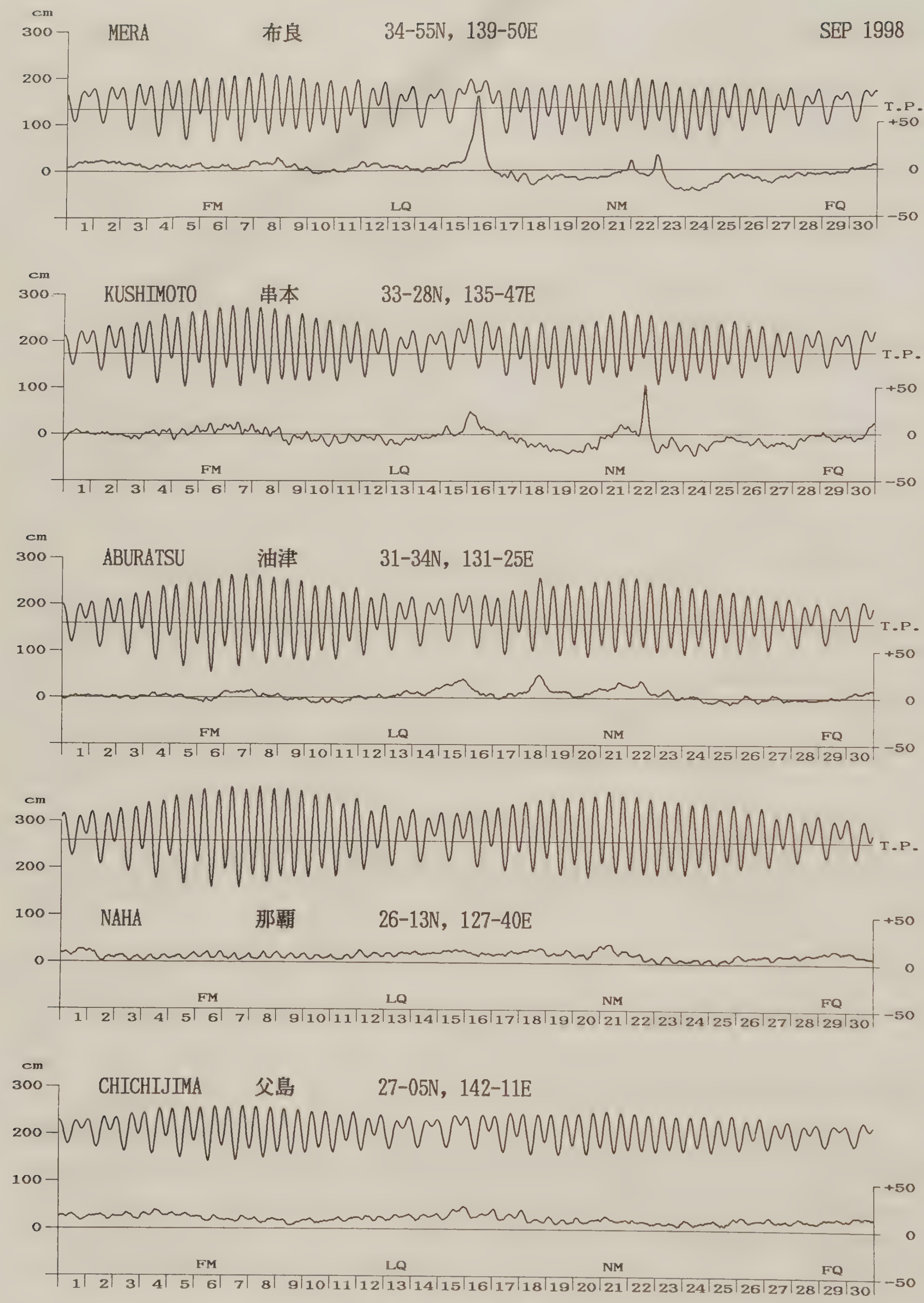


第14図 沿岸潮位時系列図（1998年 9月）

Fig.14 Time series of hourly sea level observation (upper line) and its anomalies (lower line) at 9 stations of the JMA in the right panel.
Short term variations are removed from raw data.

FM: full moon,　FQ: first quarter
NM: new moon,　LQ: last quarter
T.P.: Mean sea level of Tokyo Bay (Tokyo Peil)

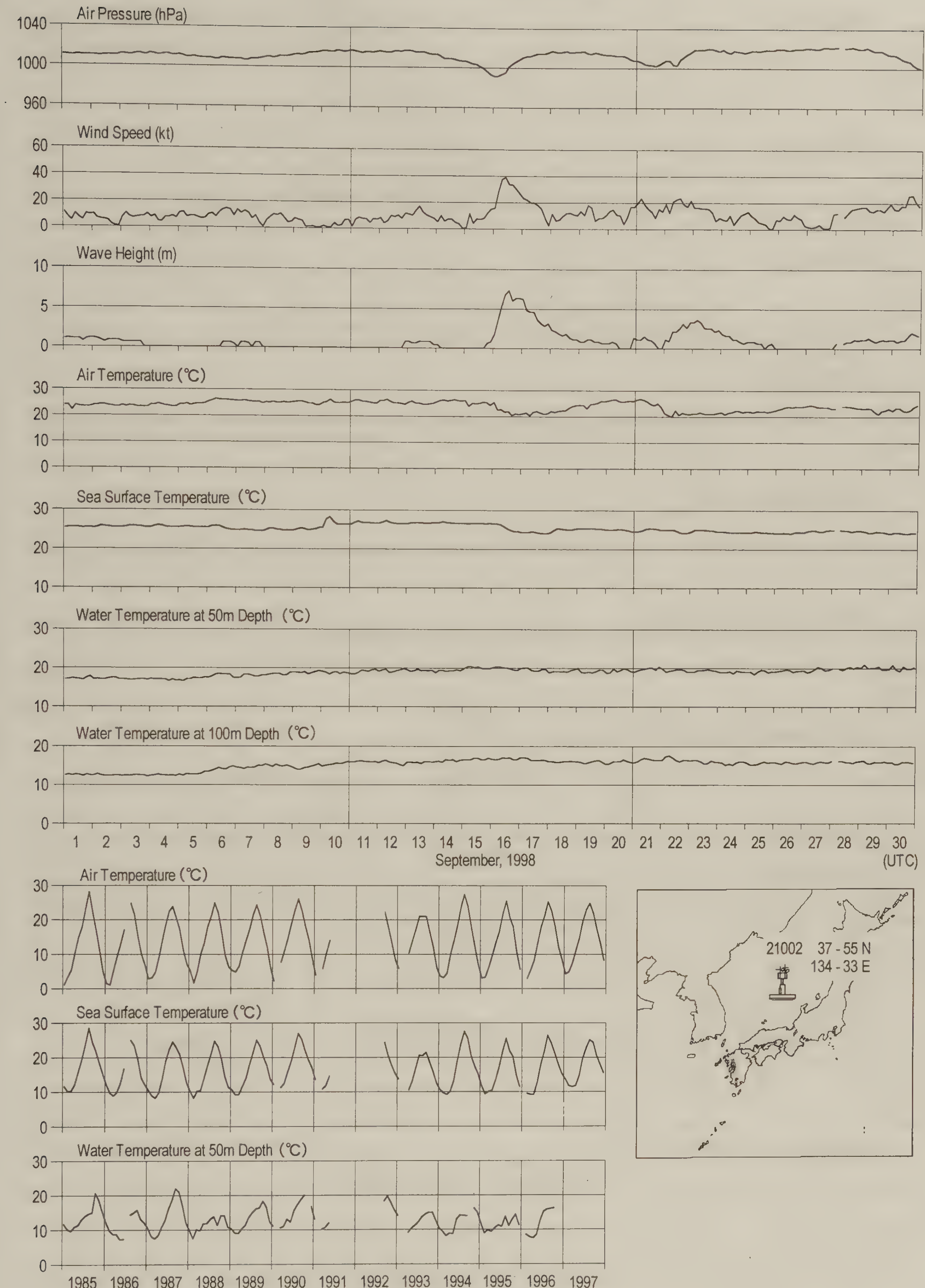
Time series of Sea Level



第14図 つづき

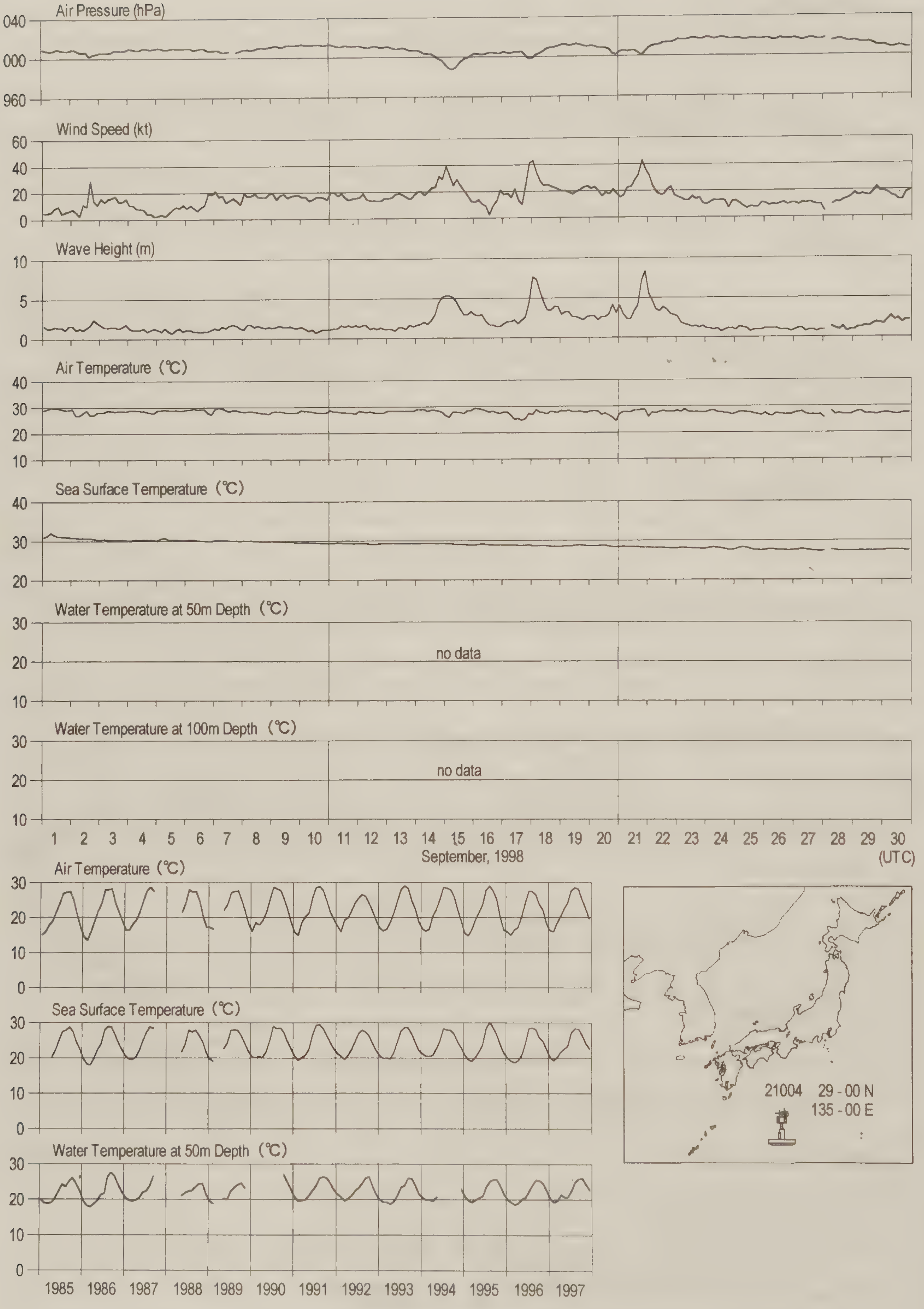
Fig.14 continue

Ocean Data Buoy Observations



第15図　海洋気象ブイロボットによる観測要素の時系列図（日本海：21002）
上段は３時間毎の観測値を、下段は月平均値を示す。

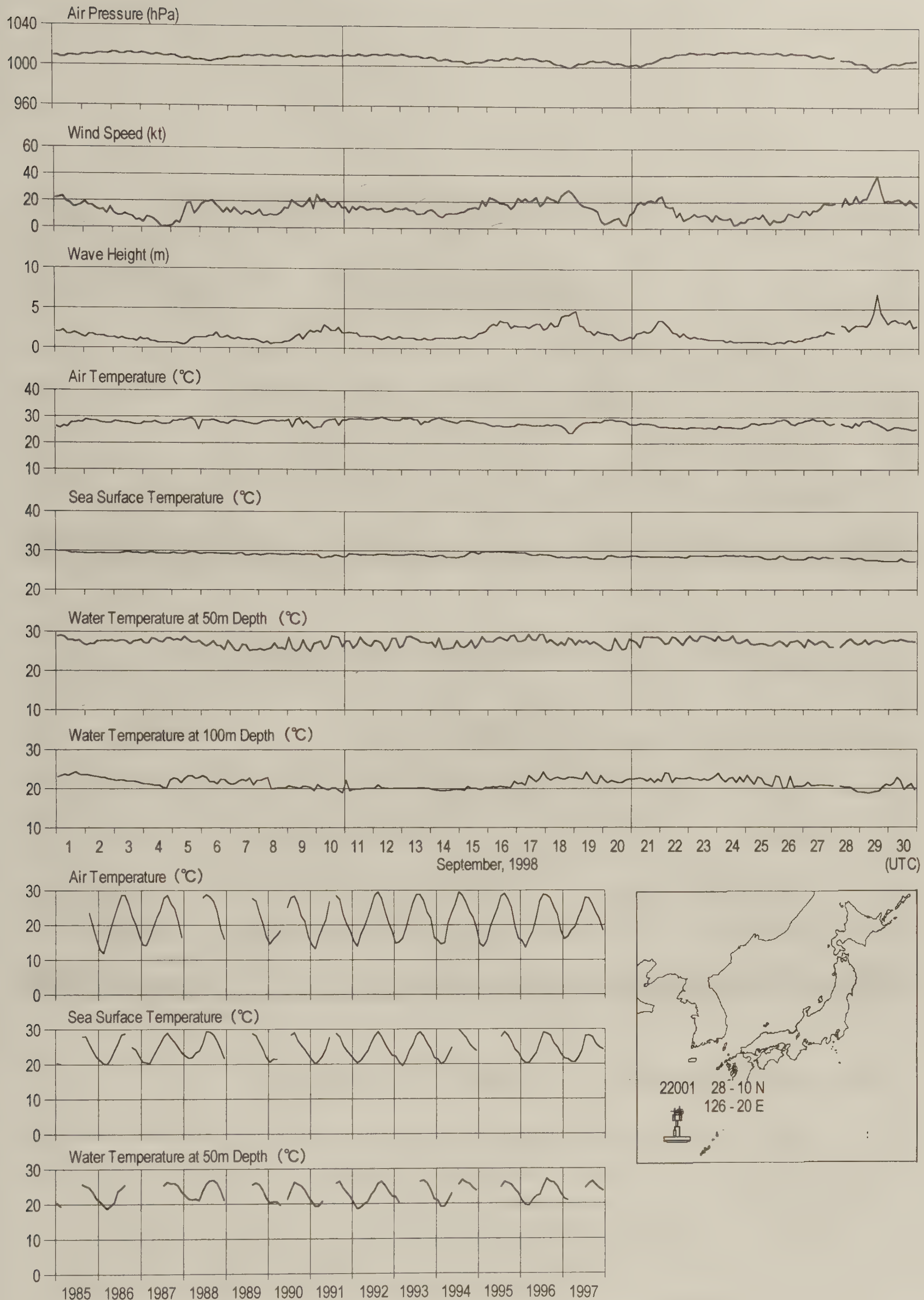
Fig. 15　Time series of JMA buoy observation in the Japan Sea (WMO ID No. 21002). The upper panel shows three hourly observation and the lower panel shows the monthly mean data.



第15図　海洋気象ブイロボットによる観測要素の時系列図（四国沖：21004）
上段は３時間毎の観測値を、下段は月平均値を示す。

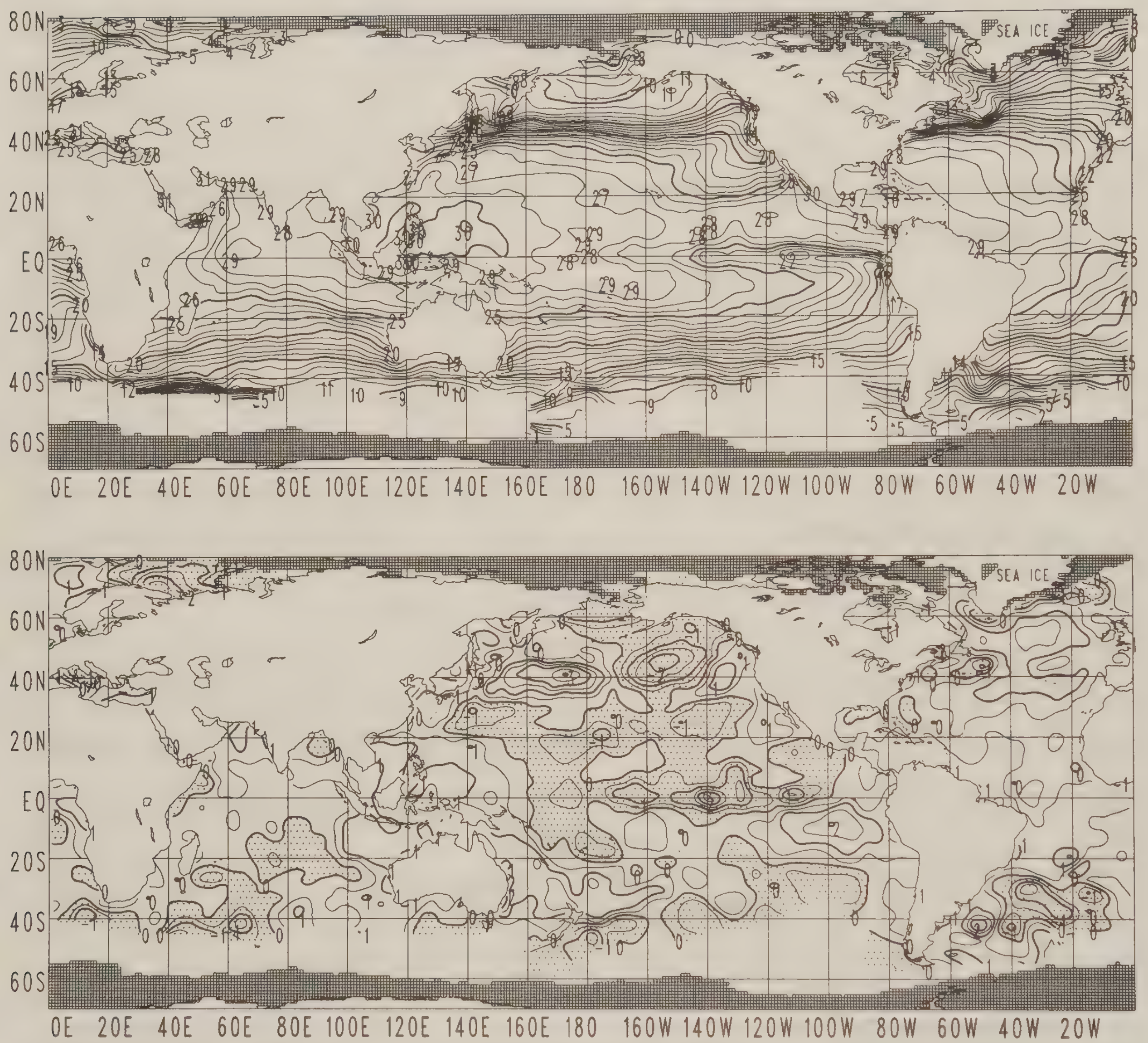
Fig. 15 Time series of JMA buoy observation south of Shikoku (WMO ID No. 21004). The upper panel shows three hourly observation and the lower panel shows the monthly mean data.

Ocean Data Buoy Observations



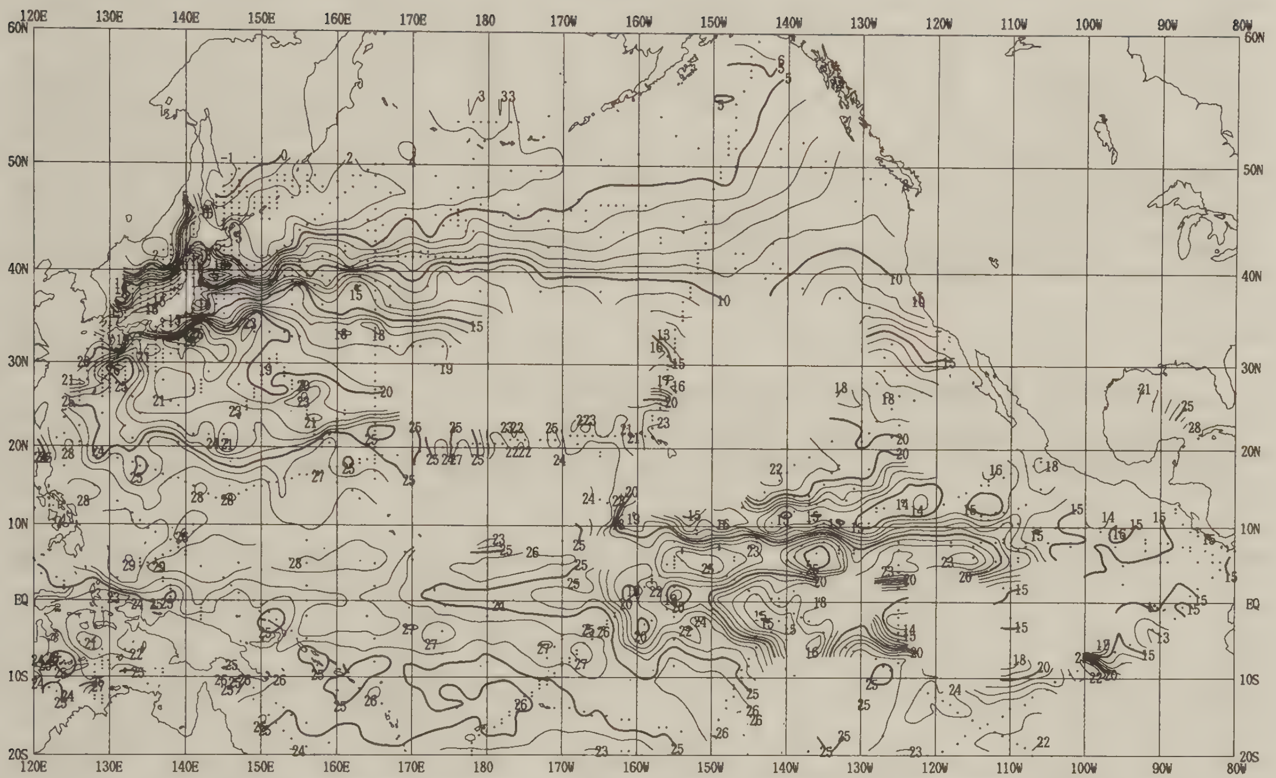
第15図　海洋気象ブイロボットによる観測要素の時系列図（東シナ海：22001）
上段は３時間毎の観測値を、下段は月平均値を示す。

Fig. 15　Time series of JMA buoy observation in the East China Sea (WMO ID No. 22001). The upper panel shows three hourly observation and the lower panel shows the monthly mean data.



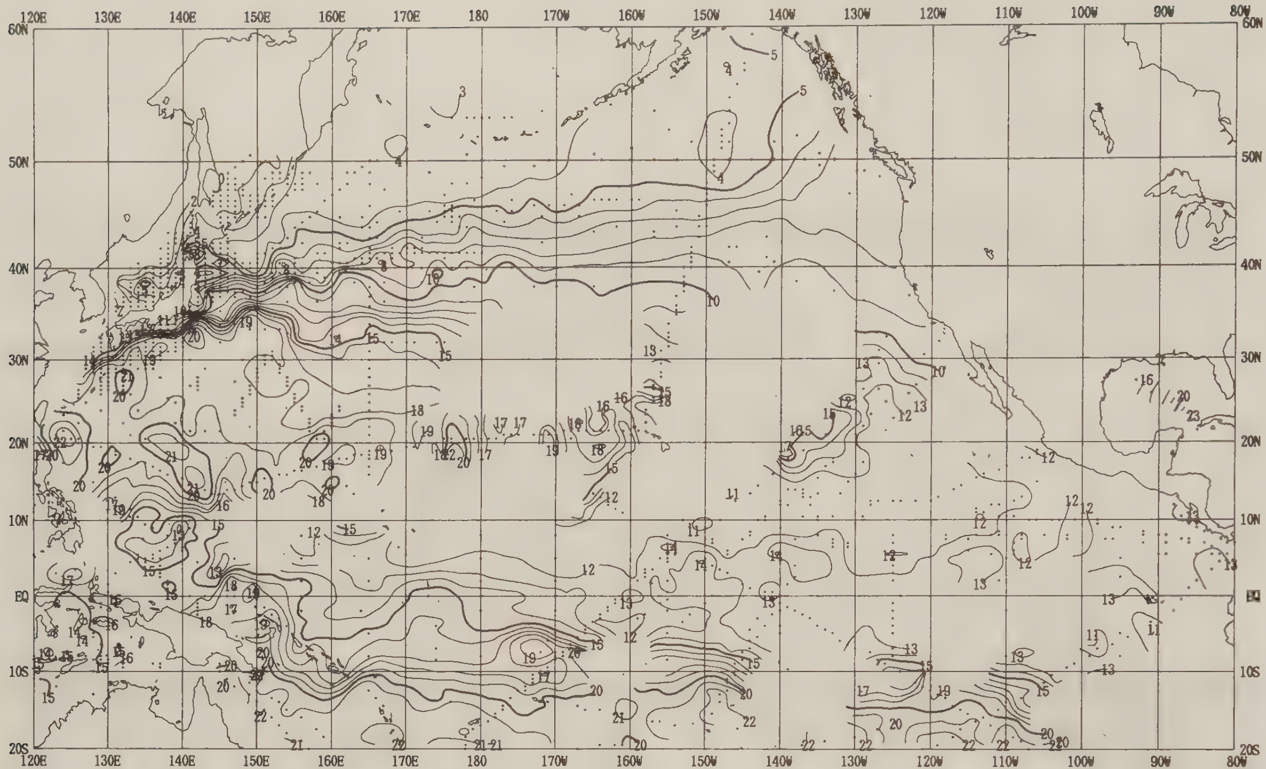
第16図　全球月平均海面水温図（上）及び偏差図（下）（1998年 9月）

Fig.16 Monthly mean sea surface temperature over the global ocean (top) and anomalies (bottom) for SEP 1998. Anomalies are computed from the JMA climatology (1961-1990). Contour interval is 1°C (top) and additional anomaly contours of ±0.5°C are shown by thin lines. Negative anomalies are spotted. Maximum coverage of sea ice is shaded. Data sources for sea ice are U.S. National Ice Center (polar regions) and JMA (the Sea of Okhotsk).



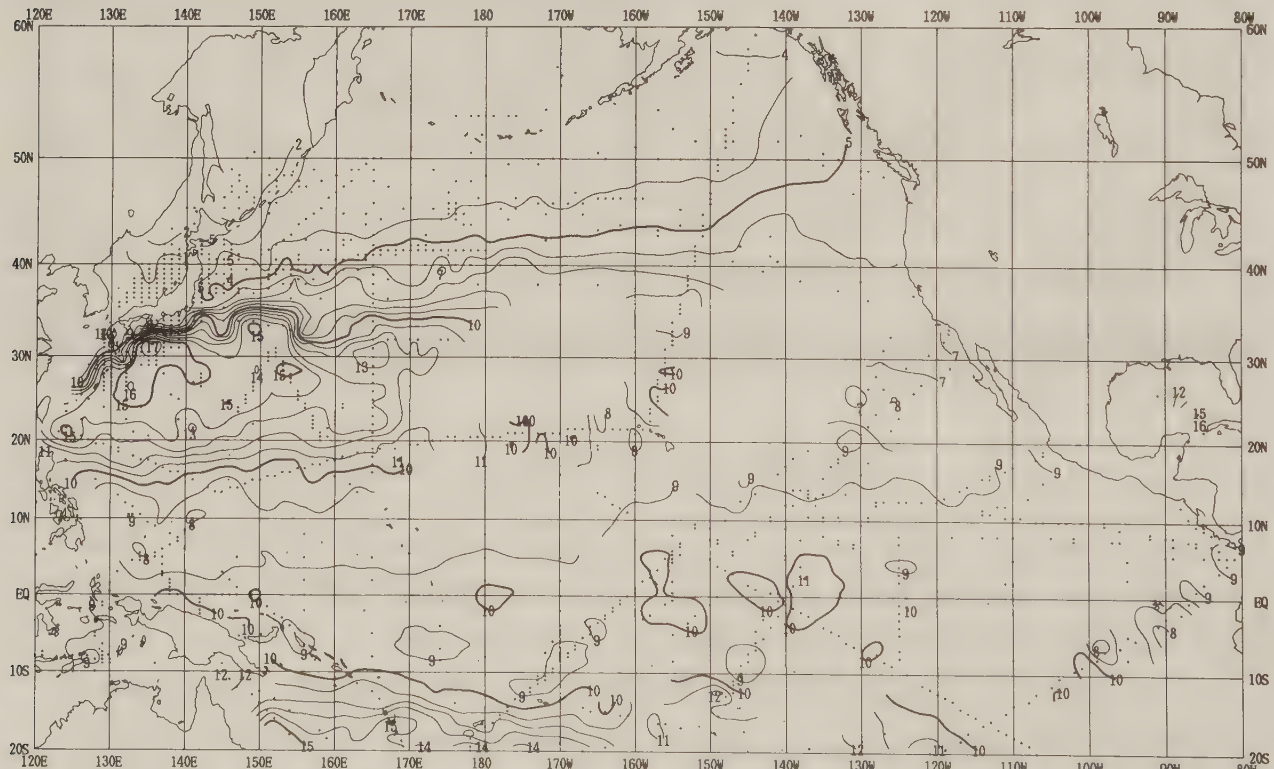
第17図　太平洋表層水温図(深さ100m)（1998年 9月）

Fig.17 Subsurface (100m) temperatures in the Pacific Ocean for SEP 1998.
Contour interval is 1°C. Observation points are denoted by dots.



第18図　太平洋表層水温図(深さ200m) (1998年 9月)

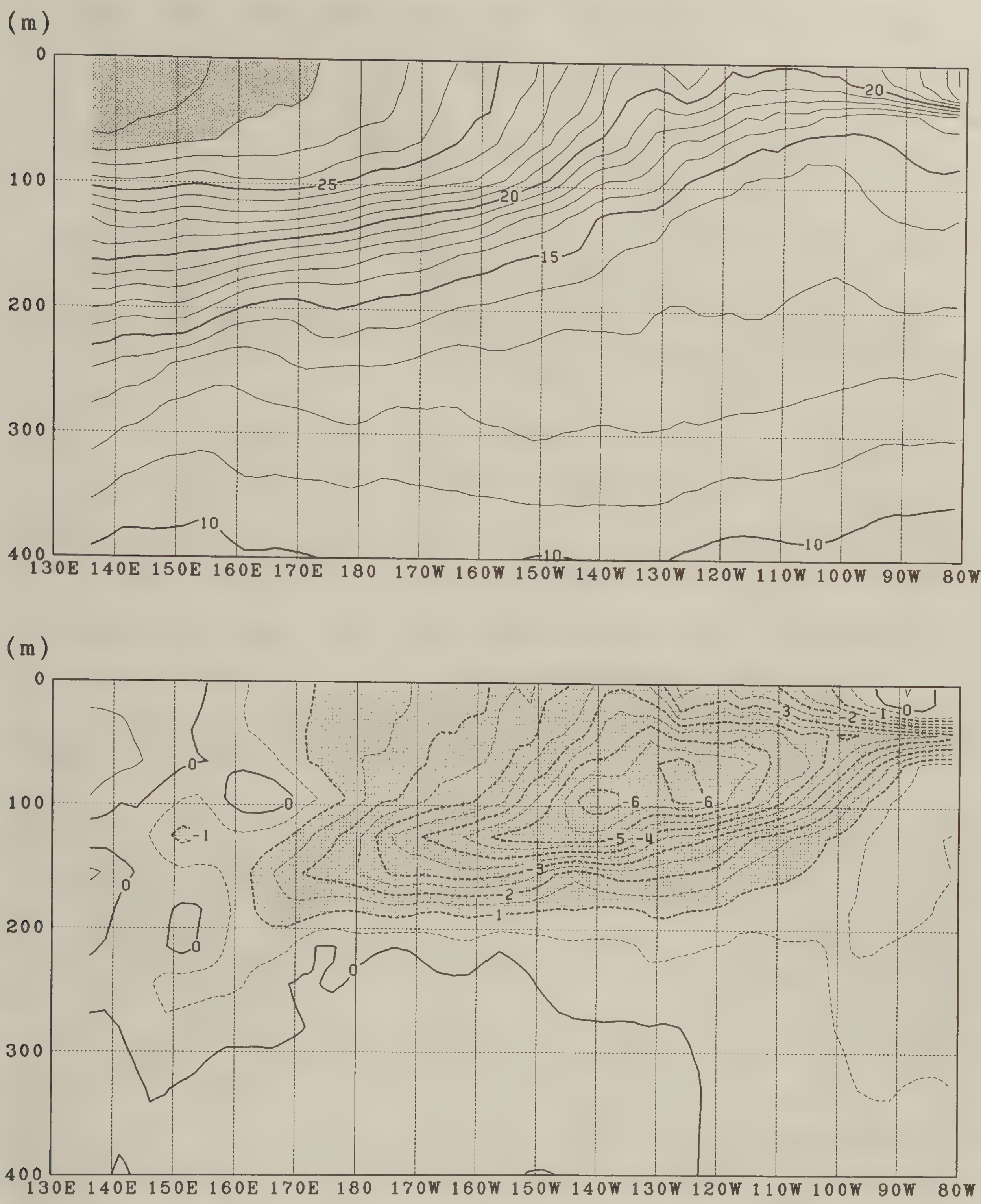
Fig.18 Subsurface (200m) temperatures in the Pacific Ocean for SEP 1998. Contour interval is 1°C. Observation points are denoted by dots.



第19図　太平洋表層水温図(深さ400m) (1998年 9月)

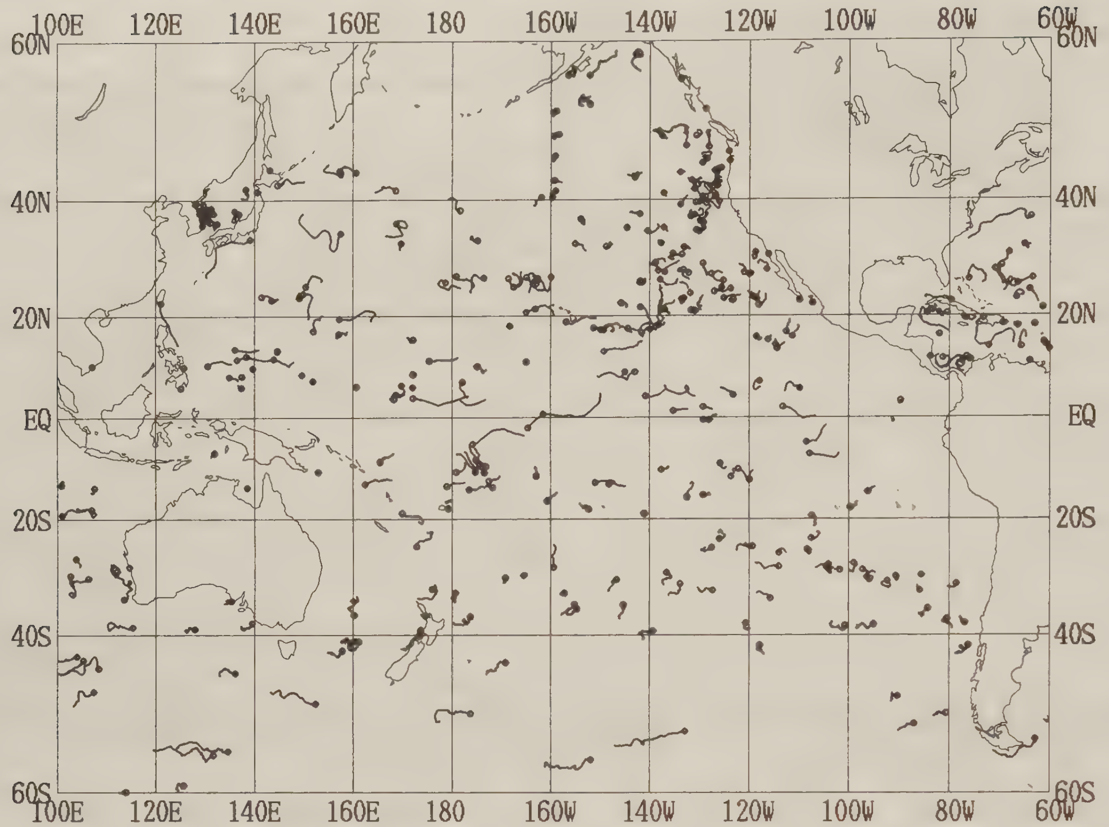
Fig.19 Subsurface (400m) temperatures in the Pacific Ocean for SEP 1998. Contour interval is 1°C. Observation points are denoted by dots.

Depth-Longitude Sections of Equatorial Temperature & Anomalies



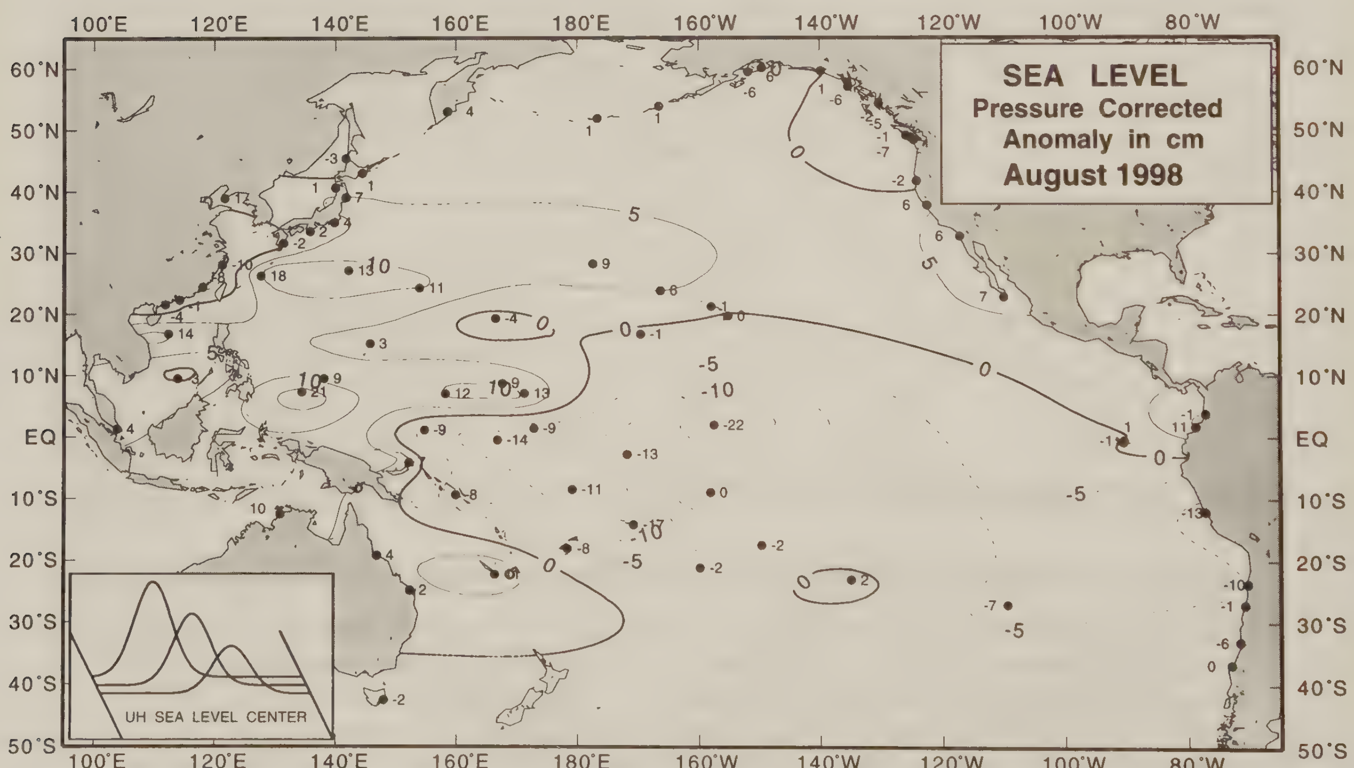
第20図　太平洋赤道に沿う表層水温（上）及び偏差（下）の深度－経度断面図（1998年 9月）

Fig.20 Depth-longitude sections of temperature (top) and anomalies (bottom) along the equator in the Pacific Ocean for SEP 1998. Data are derived from the Ocean Data Assimilation System of JMA. Contour interval is 1°C (top) and 0.5°C (bottom). Values greater than 28°C in the top panel are shaded. In the bottom panel, values greater than 1°C are shaded and values less than -1°C are spotted. Anomalies are computed from 1987-1997 base period means.



第21図　太平洋ブイ流跡図(1998年 9月)

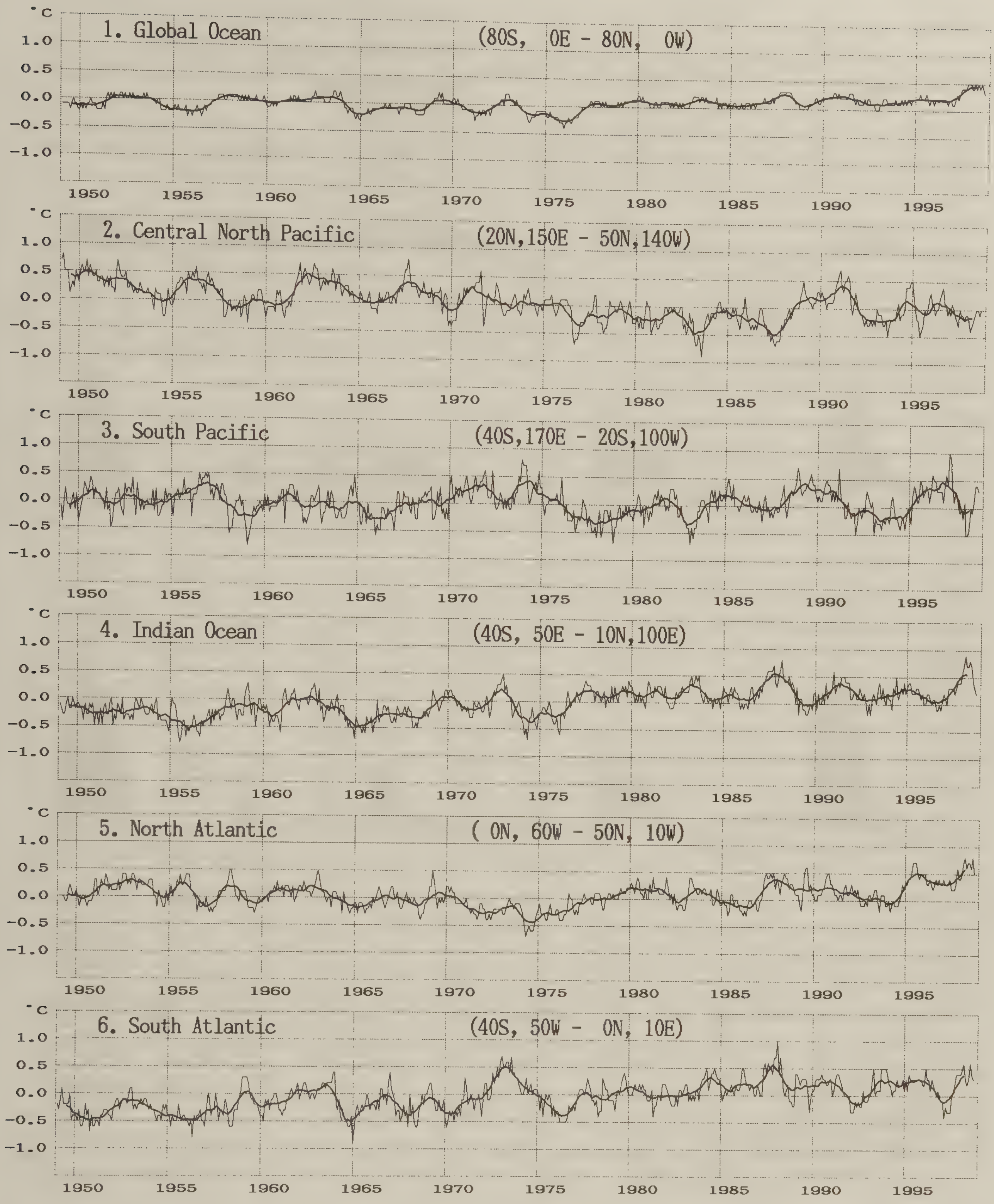
Fig.21 Movements of drifting buoys in the Pacific Ocean during SEP 1998.
Each track is for one buoy. Small circles represent last positions for the month.



第22図　太平洋海面水位偏差図 (1998年 8月)

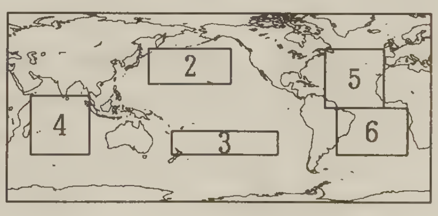
Fig.22 Monthly sea level anomalies for AUG 1998 obtained from mean sea level (1975-1995) adjusted for atmospheric pressure. This figure is prepared by the SOC of ISLP-PAC, Dept. of Oceanography, Univ. of Hawaii.

Long-term Variation of Monthly Mean SST Anomalies

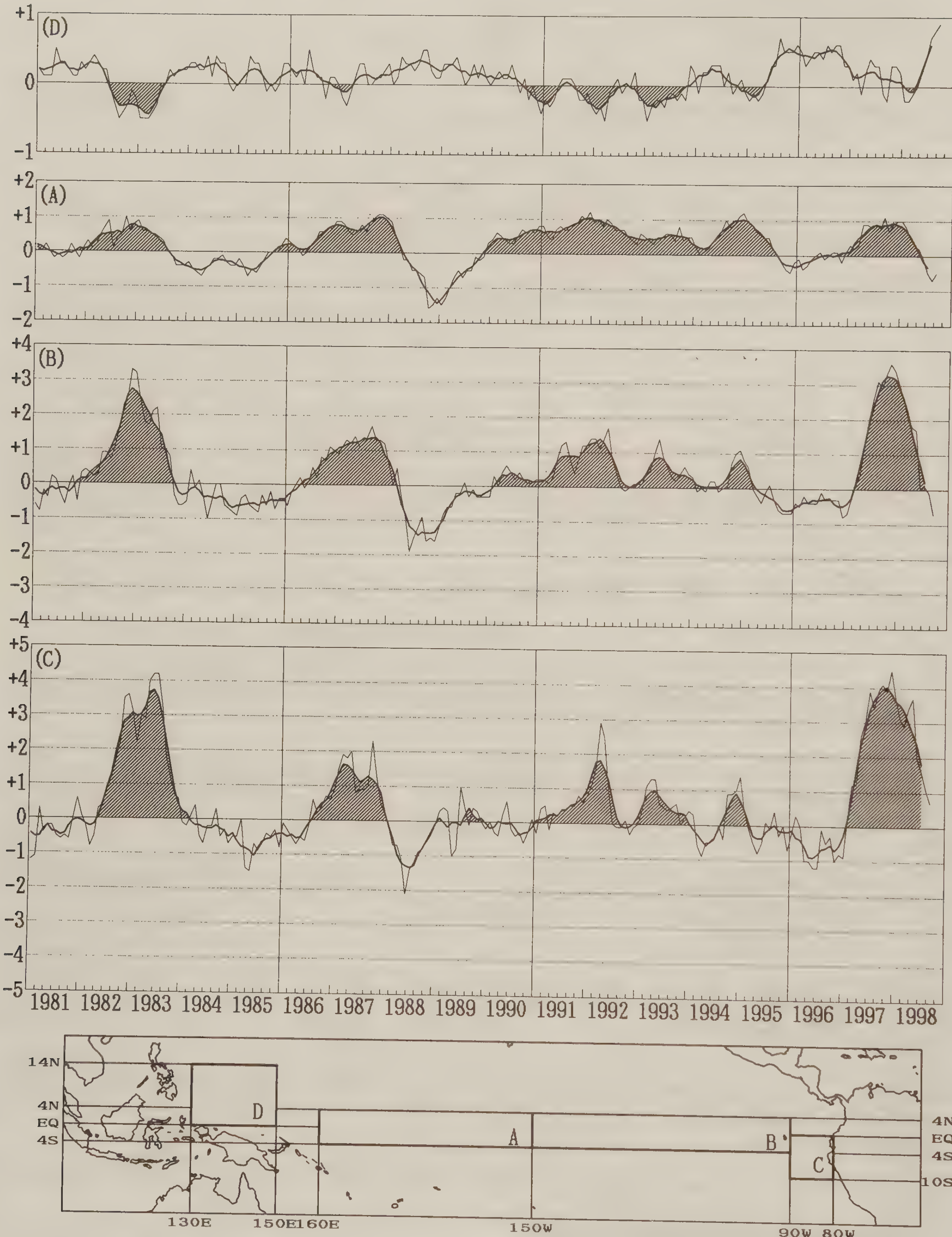


第23図 海域平均海面水温偏差の長期変動

Fig.23 Long-term variations of monthly mean sea surface temperature anomalies (°C) for the areas shown in the right panel. Anomalies are computed from the JMA climatology (1961-90). Thin lines show the monthly mean and thick lines their 13-month running means.



Time Series of Equatorial Pacific SST Anomalies



第24図　太平洋赤道域の海面水温偏差時系列図

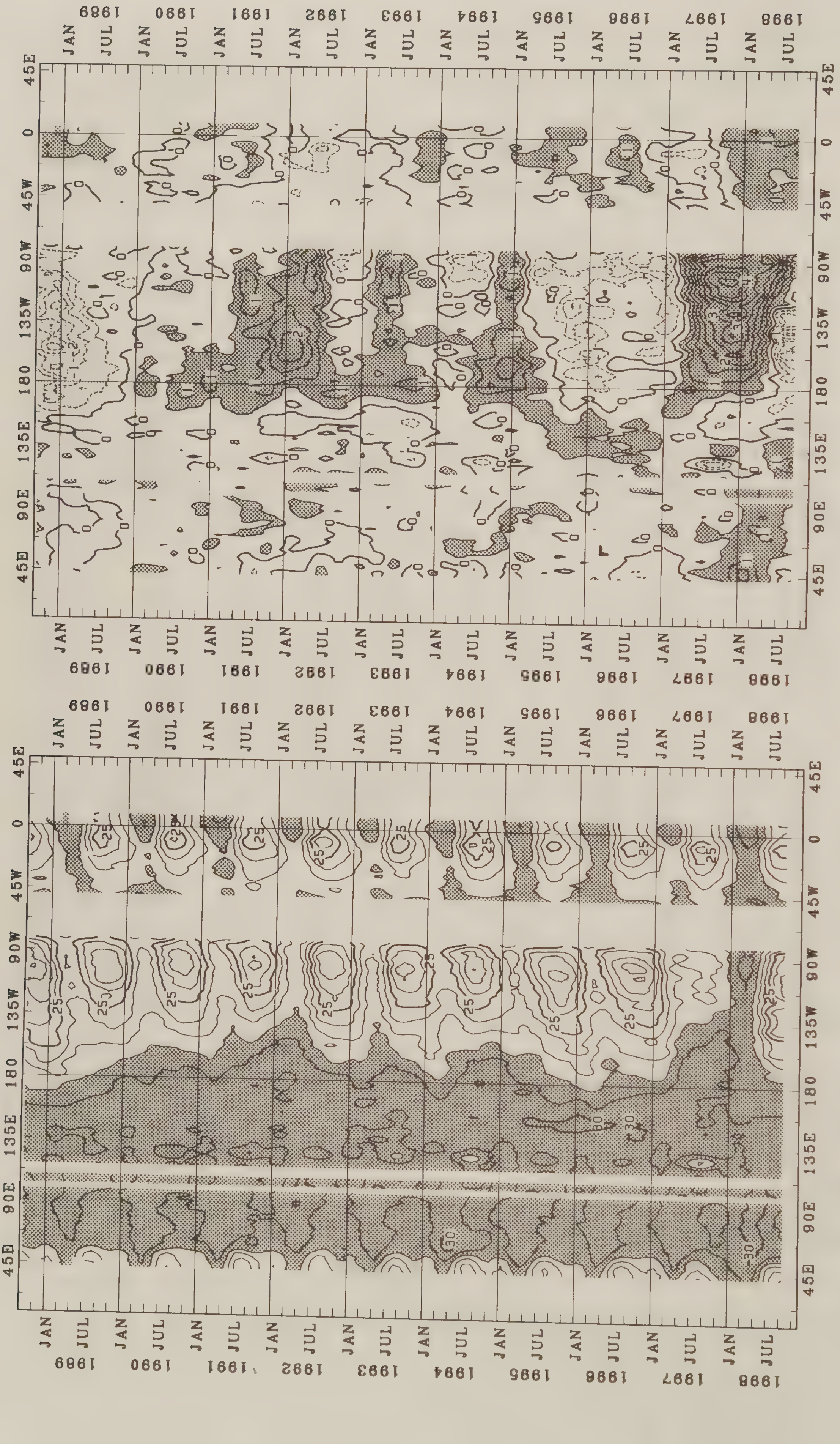
Fig.24 Time series of monthly mean SST anomalies (°C) in the equatorial Pacific Ocean for the areas indicated at the bottom panel. Thin lines show the monthly means and thick lines their 5-month running means. Positive anomalies (A, B, C) and negative anomalies (D) are shaded. Anomalies are computed from the JMA climatology (1961-1990).

El Nino Monitoring Indices

MONTH	SEA SURFACE TEMPERATURE AND ANOMALY (°C) REGION D 14N-EQ 130E-150E		REGION A 4N-4S 160E-150W		REGION B 4N-4S 150W-90W		REGION C EQ-10S 90W-80W		SOI	SEA LEVEL PRESSURE ANOMALY (hPa) TAHITI 17-33S 149-37W	DARWIN 12-24S 130-52E
JAN 96	29.0	0.5	27.9	-0.1	25.0	-0.4	24.1	-0.2	0.8	1.0	-0.7
FEB 96	28.6	0.3	27.6	-0.4	25.7	-0.5	26.0	0.3	0.1	-0.2	-0.5
MAR 96	28.8	0.4	27.8	-0.3	26.7	-0.2	25.9	0.0	0.7	1.0	-0.3
APR 96	29.3	0.5	28.1	-0.1	26.7	-0.4	24.1	-1.0	0.8	0.5	-0.5
MAY 96	29.6	0.5	28.5	0.0	26.2	-0.4	22.9	-1.0	0.3	1.2	1.2
JUN 96	29.7	0.4	28.6	0.1	25.7	-0.4	21.5	-1.2	1.4	1.6	-0.2
JUL 96	29.8	0.6	28.4	-0.1	25.1	-0.1	20.4	-1.2	0.7	0.6	-0.6
AUG 96	29.6	0.5	28.4	0.0	24.3	-0.3	20.5	-0.1	0.4	0.4	-0.3
SEP 96	29.8	0.6	28.4	0.1	24.3	-0.3	19.8	-0.5	0.5	-0.7	-1.7
OCT 96	29.9	0.6	28.5	0.1	24.3	-0.3	20.4	-0.3	0.4	-0.1	-0.8
NOV 96	29.5	0.3	28.2	-0.2	24.3	-0.3	20.5	-1.0	-0.0	-0.5	-0.5
DEC 96	29.2	0.3	28.3	0.1	24.1	-0.8	21.8	-0.8	0.8	-0.3	-1.9
JAN 97	28.6	0.1	28.3	0.3	24.7	-0.7	23.4	-0.9	0.3	1.7	0.9
FEB 97	28.5	0.2	28.2	0.2	25.9	-0.3	25.9	0.2	1.2	1.0	-1.9
MAR 97	28.3	-0.1	28.4	0.3	27.0	0.1	27.1	1.2	-0.6	-0.5	0.9
APR 97	29.0	0.2	29.1	0.9	27.5	0.4	26.3	1.2	-1.1	0.4	2.3
MAY 97	29.5	0.4	29.4	0.9	27.9	1.3	26.5	2.6	-2.5	-2.1	0.9
JUN 97	29.6	0.3	29.3	0.8	28.1	2.0	25.7	3.0	-2.3	-0.8	2.1
JUL 97	29.5	0.3	29.4	0.9	27.8	2.6	25.5	3.9	-0.8	-0.1	1.2
AUG 97	29.0	-0.1	29.2	0.8	27.7	3.1	24.0	3.4	-2.0	-0.9	2.2
SEP 97	29.0	-0.2	29.4	1.1	27.5	2.9	24.2	3.9	-1.4	0.1	2.7
OCT 97	29.6	0.3	29.1	0.7	27.9	3.3	24.8	4.1	-1.6	-0.2	2.7
NOV 97	29.5	0.3	29.3	0.9	28.2	3.6	25.4	3.9	-1.2	0.4	2.7
DEC 97	29.1	0.2	29.2	1.0	28.3	3.4	27.1	4.5	-0.9	-0.5	1.1
JAN 98	28.3	-0.2	29.0	1.0	28.4	3.0	28.0	3.7	-2.3	-3.6	1.4
FEB 98	28.1	-0.2	28.8	0.8	28.8	2.6	28.8	3.1	-1.8	-0.9	3.5
MAR 98	28.3	-0.1	28.6	0.5	29.0	2.1	28.8	2.9	-2.5	-2.8	2.3
APR 98	28.8	0.0	28.5	0.3	28.9	1.8	28.5	3.4	-2.3	-1.5	1.4
MAY 98	29.3	0.2	28.7	0.2	28.3	1.7	27.6	3.7	0.0	0.4	0.5
JUN 98	29.7	0.4	28.4	-0.1	26.1	0.0	24.7	2.0	1.1	0.9	-0.5
JUL 98	29.9	0.7	28.0	-0.5	25.3	0.1	23.2	1.6	1.5	1.8	-0.6
AUG 98	29.9	0.8	27.7	-0.7	24.5	-0.1	21.7	1.1	1.0	1.4	-0.2
SEP 98	30.1	0.9	27.8	-0.5	23.9	-0.7	21.0	0.7	1.0	1.4	-0.4

第1表　エルニーニョ監視指数

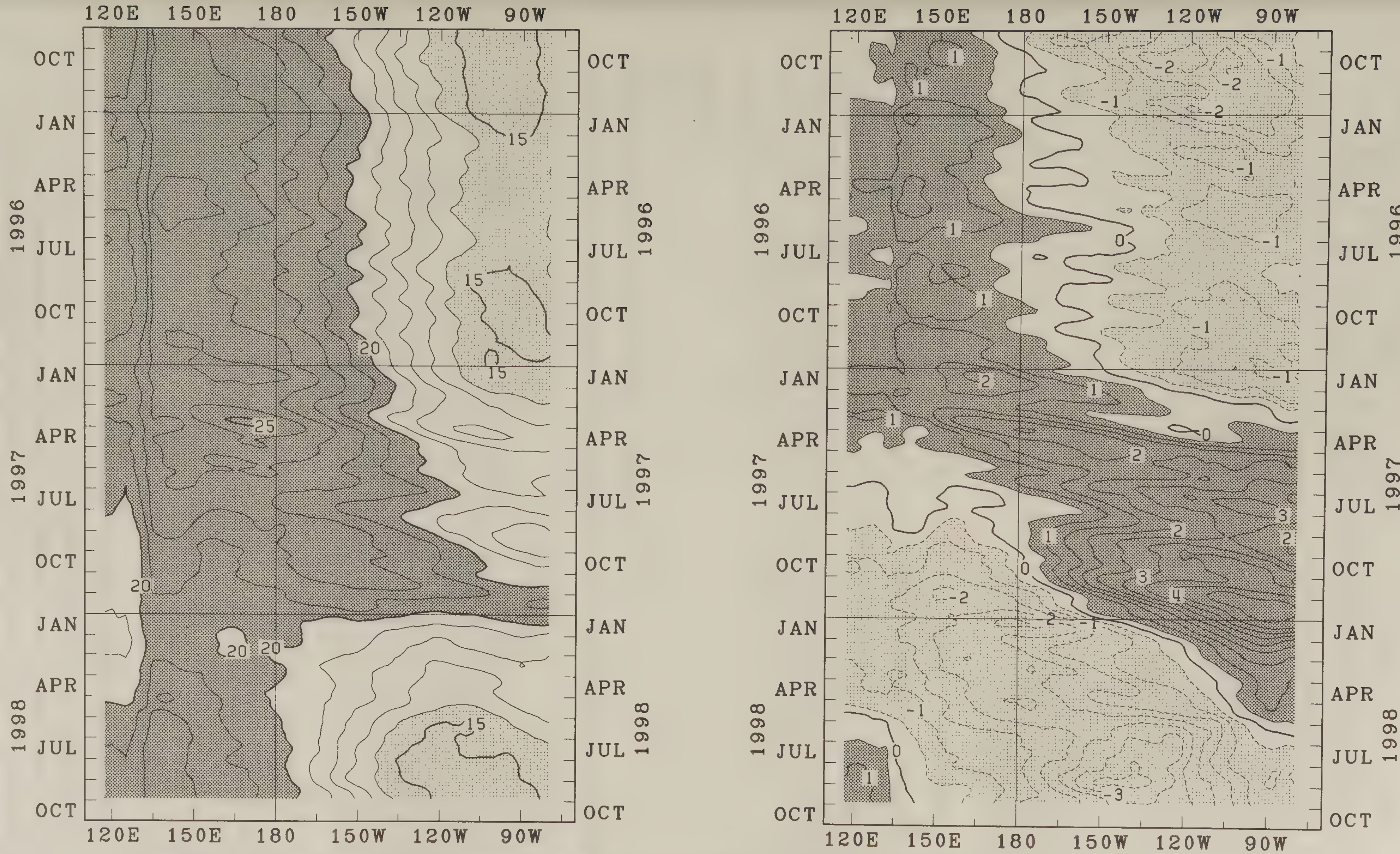
Table 1 El Nino Monitoring indices



第25図　赤道に沿った海面水温（左）および偏差（右）の時間-経度断面図

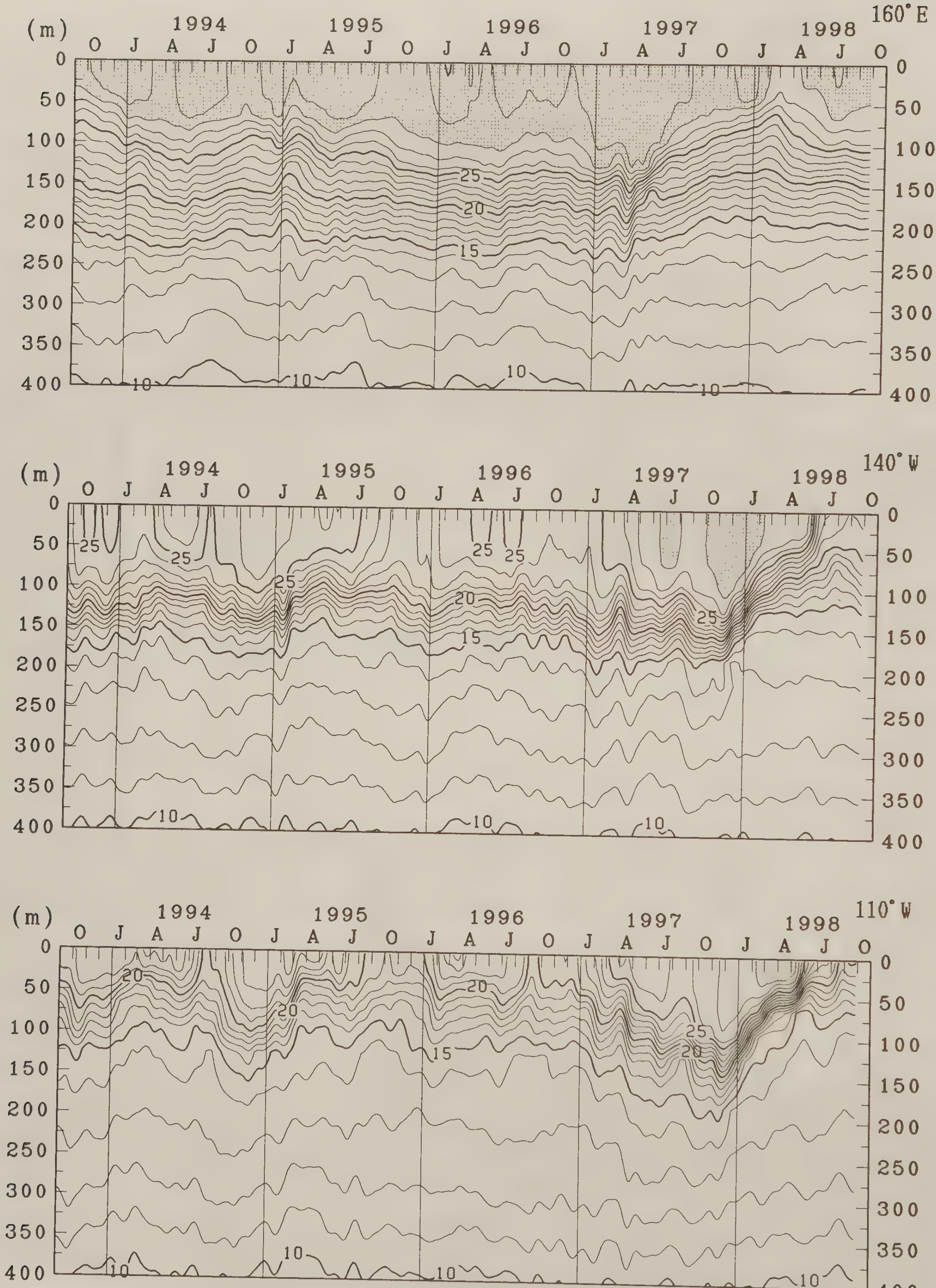
Fig.25 Time-longitude sections of SSTs (left) and anomalies (right) along the equator (2°N-2°S) in the global ocean. Contour interval is 1 °C (left) and 0.5 °C (right). Values greater than 28 °C are shaded and values less than 23 °C are spotted in the left panel. Dashed contours indicate negative anomalies in the right panel. Anomalies are computed from 1961-1990 base period means.

Time-Longitude Sections of Ocean Heat Content & Anomalies (Eq.)



第26図　太平洋の赤道に沿う海洋表層の貯熱量（左）及び偏差（右）の時間－経度断面図

Fig.26 Time-longitude sections of ocean heat content in the upper 260m along the equator (left) and anomalies (right) in the Pacific Ocean. Data are derived from the Ocean Data Assimilation System of JMA. Contour interval is 1°C (left) and 0.5°C (right). Values greater than 20°C are shaded and values less than 16°C are spotted in the left panel. Dashed contours indicate negative anomalies in the right panel. Anomalies are computed from 1987-1997 base period means.



第27図　太平洋赤道域の表層水温の時間－深度断面図

(上：西部、中：中部、下：東部)

Fig.27 Time-depth sections of equatorial subsurface temperature for the western Pacific (top, 160°E), the central Pacific (middle, 140°W) and the eastern Pacific (bottom, 110°W). Data are derived from the Ocean Data Assimilation System of JMA. Contour interval is 1°C. Values greater than 28°C are shaded.

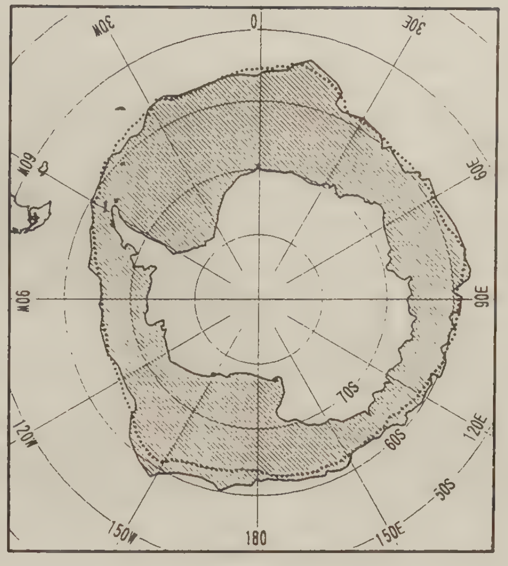


第28-1図 北極域の海氷図（1998年 9月13日）

Fig.28-1 Sea ice chart in the Arctic on 13 Sept. 1998.

The shaded area represents the sea ice extent. The dotted line denotes the mean ice edge averaged for the period from 1972 through 1990.

The data source is the National Ice Center (USA).



第28-2図 南極域の海氷図（1998年 9月17日）

Fig.28-2 Sea ice chart in the Antarctic on 17 Sept. 1998.

The shaded area represents the sea ice extent. The dotted line denotes the mean ice edge averaged for the period from 1973 through 1990.

The data source is the National Ice Center (USA).

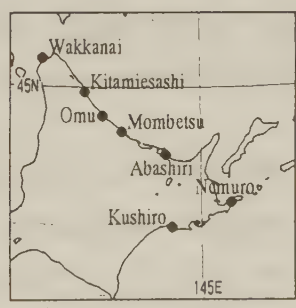
第28-1表　各地の海氷現象の極値表（1998年5月まで）

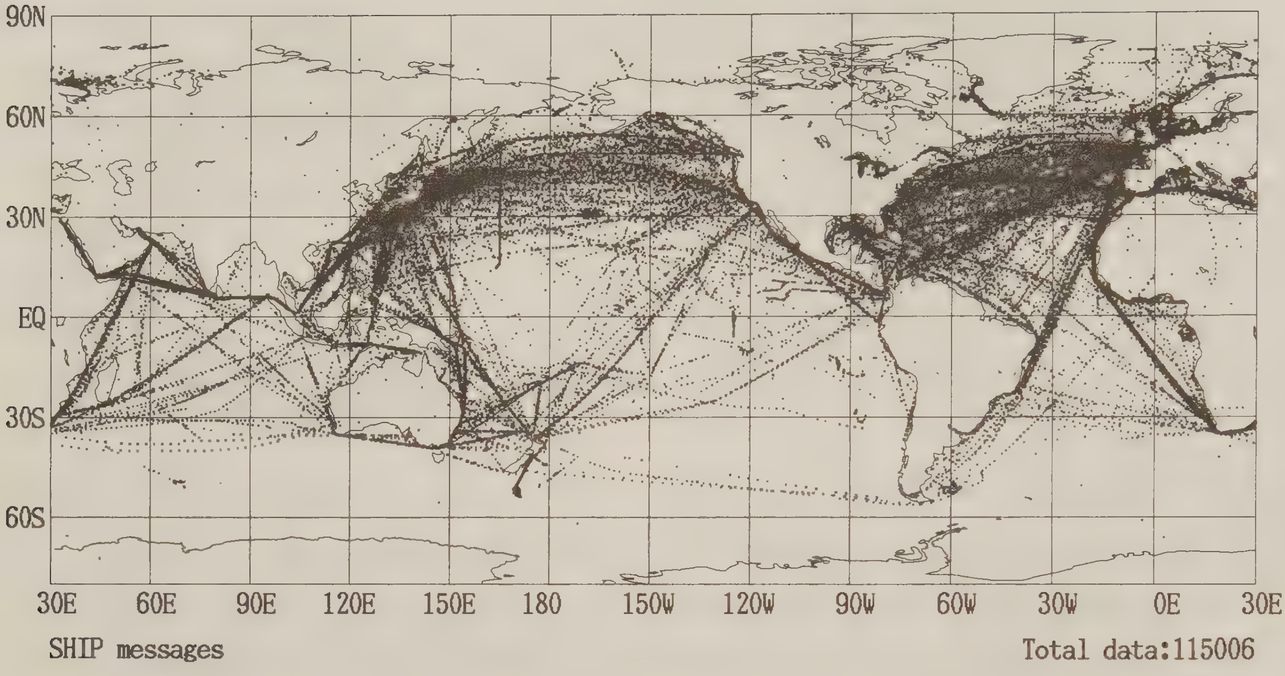
Table 28-1 Extremes of charactristic indices for drift ice conditions as of May in 1998.

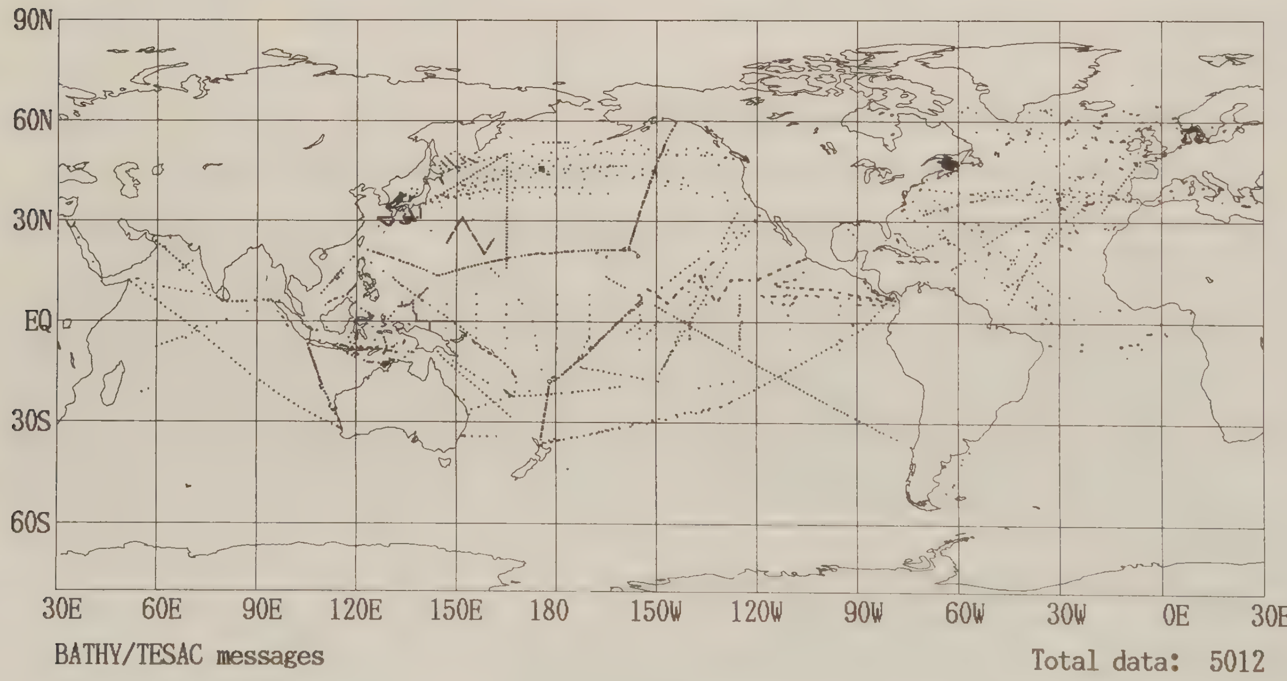
Station	First date in sight		Last date in sight		Numbers of days in sight	
	Earliest	Latest	Earliest	Latest	Maximum	Minimum
WAKKANAI	Jan.16,1961	Mar.25,1952	Jan.24,1959	Apr.09,1965	54(1984/85)	0(1997/98)
KITAMIESASI	Jan.01,1953	Mar.21,1989	Feb.27,1992	May 04,1993	81(1977/78)	8(1991/92)
OMU	Dec.31,1946	Mar.19,1989	Mar.07,1951	May 06,1993	94(1980/81)	13(1988/89)
MOMBETSU	Jan.03,1967	Feb.14,1989	Feb.19,1976	May 08,1993	100(1980/81)	10(1988/89)
ABASHIRI	Dec.27,1953	Feb.10,1993	Mar.19,1991	May 12,1965	114(1965/66)	18(1988/89)
NEMURO	Jan.10,1951	Mar.20,1949	Feb.13,1989	May 02,1979	70(1985/86)	0(1990/91)
KUSHIRO	Feb.01,1960	Mar.21,1985	Feb.15,1967	Apr.23,1984	no record	no record

Note 1: The first/latest dates have been recorded since 1946 except Mombetsu (since 1954).

Note 2: The number of days in sight have been recorded since 1956.

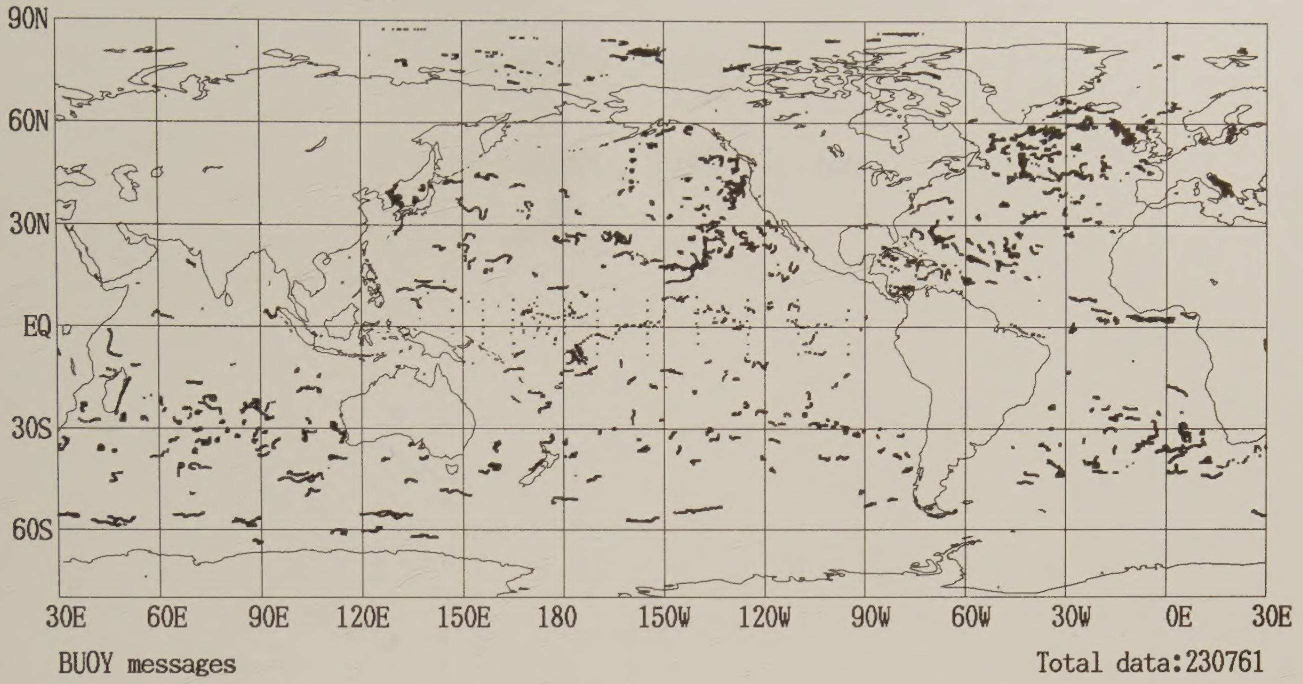


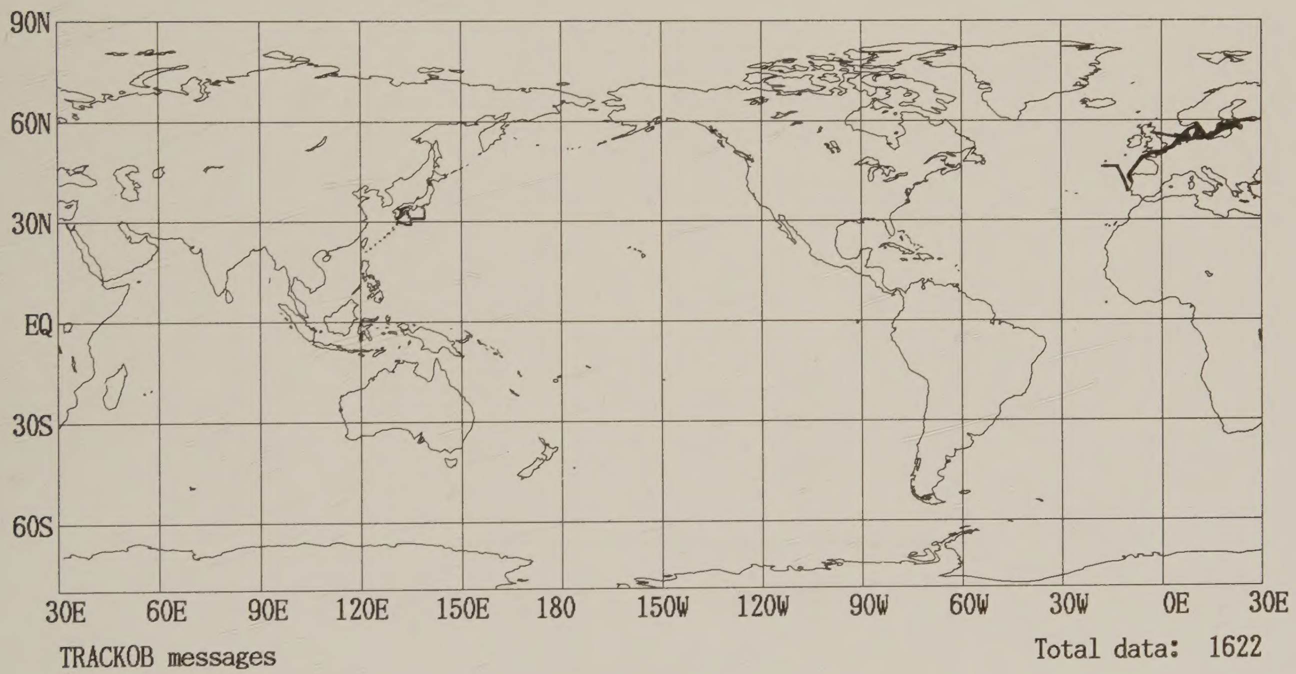




第29-1図　測点分布図(1998年 9月)

Fig.29-1 Geographical distribution of SHIP messages (SST data, top) and BATHY/TESAC messages (subsurface temperature data, bottom) for SEP 1998.





第29-2図　測点分布図(1998年 9月)

Fig.29-2 Geographical distribution of BUOY messages (buoy drift and SST data, top) and TRACKOB messages (ship drift and SST data, bottom) for SEP 1998.

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